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ARTICLE I.

The American Academy of Dental Surgery.

[Reported for the American Journal of Dental Science.]

The regular meeting of this organization occurred on Tuesday evening, March 27th. The meeting was called to order by the President, Dr. Geo. H. Perine, and minutes of the last meeting were read and approved. The Chairman of the Executive Committee recommended several applicants for fellowship, who were unanimously elected.

. The Treasurer's, Secretary and Curator's reports, were read, adopted, and ordered to be placed on file. Donations received and recorded.

After miscellaneous business had been completed, Dr. Brush reported an operation performed by J. F. Miner, M. D., removal by Galvano Cautery, Malignant Diseased Ton sil, which seriously interfered with both respiration and deglutition, and was also causing considerable annoyance from the amount of pain it produced. The patient, a man of about sixty-three years, presented an anxious, cachectic appearance, and though of an apparently sturdy constitution, he now looked ill and worn out. An examination of the throat revealed a tumor springing from the seat of the right tonsil and almost filled the entire throat; it was modulated in appearance, soft, and bled on slight manipulation. The discharge from the surface was not very profuse, but had a very disagreeable odor; the glands in the neck, on the corresponding side were enlarged. The tumor in the throat had been of somewhat rapid growth, the exact duration of which was not however at the time noted. No family history of cancer was elicted. The diagnosis made, was encephaloid disease of the tonsil, and after carefully weighing the dangers of the operation, its removal was advised, not with the idea of a permanent cure, but for the purpose of affording temporary relief, which was all that was expected. An attempt was made to pass a wire loop of the galvano-cautery apparatus about the base of the tumor, but owing to the shape of the growth and its situation, this was found impossible. The platinum knife was next heated to a white heat and the larger portion of the tumor shaved off with it. It was found impossible without injury to the surrounding tissues to remove the entire tumor in this manner, and recourse was had to a pair of long curved scissors, by which all remaining fragments of the tumor was removed; the hemorrhage from the cut surface, which was quite free, was easily controlled by the dome cauterizer heated by the battery. The surface left after the removal of the tumor and the application of the cautery, had a smooth even feeling, and was evidently in good condition for whatever reparative attempt nature might make. The enlarged glands in the neck were also removed.

When the patient again presented himself for examination and advice, the tumor in the throat had not again made its appearance, but the site of the original growth had an healthy look. In the neck the glands had enlarged, and at the site of those removed, a tumor had attained the size of an English walnut. No operative procedure was advised, the object of the original operation having been attained viz;—removal of the obstruction to deglutition and respiration.

Malignant disease of the tonsil is not of a very frequent occurrence. There is nothing however in this case which warrants a report of its details, except the facility with which the operation was made. The risk attending an operation of this character, and upon which some surgeons have laid considerable stress, have heretofore been in the danger of uncontrollable hemorrhage, but surgeons now have at their command an apparatus by which the actual cautery can be applied with ease, precision, and at a moment's notice, and by the employment of the galvano-cautery, the danger surrounding this operation is in a great measure removed.

Dr. Mercer said he had great confidence in the battery for operations in the oral cavity. He had witnessed an operation made by Dr. Perine, the removal of a tumor from the mouth of a patient, with the galvano-cautery, and he would like to here from that gentleman on the subject.

Dr. Perine said he had invited the attention of the dental profession to this subject some time since, and he was pleased to know that they were becoming interested. He had found the cautery battery very useful in dental practice; indeed no agent that human skill shall devise can ever equal electricity; there are so many different ways of applying it, not only in surgery, but in medical practice. Our ignorance of its workings is no bar to our progress in the knowledge of its effects. In employing electricity, just as in the use of medicaments, generally the time required to complete a cure must bear some proportion to the duration of the malady. In affections of Neuralgia, which so often disheartens both the prescriber and the patient, he had found it would yield to the application of electricity. He could cite Neuralgical cases cured with the battery, where medication had failed. Dr. Perine then exibited the working of a galvano-cautery battery which he had made for dental purposes; it seems to possess all the advantages of the larger batteries, and one other which they do not, namely portability, occupying no more space than an ordinary amputating case, and which will continue a white heat about thirty minutes. Dr. Perry said he had used eletricity with much satisfaction in his practice in cases of neuralgia. After some further remarks upon the subject, Dr. Roberts presented the following interesting cases treated by Clinton Wagner, M. D., New York.

Mrs. S. P., aged 41, a native of Ireland, sent to me by Dr. de Bremon, was admitted to the Metropolitan Throat Hospital, May 13. She stated that she first observed a small swelling under her tongue about 15 years ago; it gave rise to no inconvenience until a year ago, when it began to increase. An examination disclosed a large oval mass, or tumor, extending from beyond the lower teeth in front, to the base of the tongue posteriorly, which organ was forced upward and backwards, deglutition and speech were greatly interfered with, and for weeks she had not been able to take solid food.

The tumor was more solid than a ranula, but when pressed between the fingers, imparted the sensation of an encysted mass. An incision was made upon the left side about an inch in length, from which gushed out about three and a-half ounces of a thick, yellowish, and extremely offensive matter.

A portion of the cyst was removed, a large tent inserted, and injections of tinct. iodine made daily to excite adhesive inflammation. In ten days the cavity had closed, and the woman was discharged from the hospital cured.

Microscopically examined by Dr. Rudolf Tauszky, the contents of the cyst were found to consist of "colorless, transparent, rhomboidal plates, deposited in layers, in which the outlines of the subjacent crystals showed very distinctly through the substance of those placed above—characteristic of the crystals of cholesterin, similar to those found in the sebaceous matter of the skin."

Chemically examined, it responded to Dalton's test for cholesterin.

W. Fairlike Clarke describes a tumor somewhat similar to this case, which is found between the tongue and jaw, and which becomes prominent at the upper part of the neck, and to which the term, ranula, is improperly applied; the cure is difficult and tedious, and it is analagous to the sebaceous tumors so frequently met with in the skin.

Mr. F., aet. 39, of Baltimore, consulted me at the suggestion of Dr. Van Bibber of that city. He gave the following history: Five years ago, he first observed the trouble in his nose; it began with an acid discharge; sense of stuffness, fullness or closure of the nostril, the voice assuming a nasal tone. At the time of consulting me, these symptoms had greatly increased, and the discharge was so excessive that almost constant recourse to the handkerchief was necessary.

An examination revealed a large, rounded mass, of a bright red color, soft and yielding to the touch, filling the entire cavity of the right nostril, and distinguishable externally by a well defined prominence. The rhinoscopic examination showed that the posterior nares were not involved. The tumor was sessile, and attached principally to the cartilaginous septum, and to a slight extent to the vomer.

Removal by means of the galvano cautery was considered, but owing to the broad base, and the difficulty of successfully enclosing the whole mass in the loop, the plan was abandoned in favor of the knife. I then introduced and forced the index finger of my left hand along the floor of the nose and under the tumor as far as possible, using it as a guide for the knife, no difficulty was experienced in separating the mass from its attachments.

During the operation very little blood was lost, but a few minutes later, after he had been conveyed to bed and reac tion from the effects of the ether, had begun, frightful hemorrhage took place, anteriorly and posteriorly; syncope ensued before it could be arrested, which was finally done, however, by means of the tampon and Monsell's solution of iron; during the night he vomited several large basins of blood, each effort being followed by fainting, so great was the prostration from the loss of blood.

Under the influence of a generous diet, and a liberal allowance of Burgundy, he recovered sufficiently in a few weeks to return to his home in Baltimore. Eight months have elapsed since the operation, and there has been no return of the tumor; his voice has lost its nasal twang, and with relief from the local annoyance his general health has greatly improved.

Prof. J. W. S. Arnold, who made a microscopical examination of the tumor, described it as a "vascular myxoma, containing more round than process cells."

The nose is a favorite seat of the myxomas, but the vascular variety, particularly of the size of the one just described, is extremely rare; smaller I have frequently met with upon the alae and septum; one or two applications of the London paste, or the ferri perchlor two drachms, to aquae one ounce, is sufficient to destroy them without causing pain or annoyance to the patient. A tumor of this nature thoroughly removed by knife or caustic is not apt to recur.

I had valuable assistance during the operation from Dr. Van Bibber, of Baltimore, and Drs. Asch, McBurney and Desvernine of this city.

An animated discussion followed the presentation of the cases, which was participated in by Fellows present. When meeting adjourned.

ARTICLE II.

Death of Dr. Charles A. Jourdan from the Direct Effects of Chloroform.

At half-past four o'clock P. M., Dr. Jourdan was put under the influence of chloroform for the purpose of having the left eye extirpated, which had received an injury five months previously, while he was living in Texas.

The patient was placed on the operating table, and chloroform was administered in the usual way, which soon brought on that sleep that knew no wakening; the eye was speedily removed when the pulse and breath simultaneously ceased and all efforts to resuscitate were unavailing; he never breathed after the first alarming symptoms were noticed. He had a good constitution and no organic disease of any kind, which was proven by post mortem examination.

Dr. Jourdan was born and raised in East Tennessee, and practiced dentistry many years in Athens, Tennessee; but for the last ten years had practiced in Huntsville, Alabama, until twelve months ago, when he removed to Terrell, Texas, where he practiced until he received the accident above referred to.

Dr. Jourdan was a true gentleman and an honest man; as an operator he was among the first; as a friend he was true and noble; to know him was to like him. Society and the profession have sustained a great loss, and his family an irreparable bereavement.

S. P. C., Memphis, Tenn.,
April 7th, 1877.

ARTICLE III.

The Susquehanna Dental Association.

The 13th Annual Convention of this Society will be held at the National Hotel, Shamokin, Pa., on Wednesday, May, 16th, 1877, at 10 A. M. Session to continue two days.

Dr. G. T. Barker, of Philadelphia, will give a clinic for the benefit of the Association, which will be very interesting and instructive.

Subjects for Discussion: "Extracting during the Catamenial Period and the Period of Gestation," and "Dental Nutrition." Essayists: Drs. E. B. Long, W. H. Hertz and G. W. Klump.

Others have also kindly volunteered to assist in making the meetings interesting and instructive. All sessions open to the public.

É. B. LONG, D. D. S., *President.* J. H. JOHNSTON, D. D. S., *Rec. Secretary.*

ARTICLE IV.

Vulcanite Litigation.

SUPREME COURT OF THE UNITED STATES. No. 113.—October Term, 1876.

Daniel H. Smith, Appellant, *vs.* The Goodyear Dental Vulcanite Company and Josiah Bacon.

Appeal from the Circuit Court of the United States for the District of Massachusetts.

Mr. Justice Strong delivered the opinion of the Court.

A brief review of the history and nature of the patent which the complainants allege has been infringed will aid materially in solving the questions presented by this appeal. On the 14th day of May, 1852, Dr. John A Cummings, a dentist of Boston, filed in the Patent Office, a caveat to protect an invention he claimed to have made, of certain new and useful improvements in the setting and plates of artificial sets of teeth. The description accompanying the caveat indicated with very considerable clearness what the alleged invention was, and the objects sought to be gained by it. The improvement was declared to—

> "Consist in forming the plate, and also the gums in which the teeth are inserted, of rubber or some other elastic substance, so compounded with sulphur, lead and other similar substances as to form a hard gum, or whalebone gum, rigid enough for the purpose of mastication, and pliable enough to yield a little to the mouth."

"By this improvement," the caveator said, "the teeth can be easily baked into the gums which form one piece with the plate." Subsequently, on the 12th of April, 1855, he applied for a patent, reciting in his application that he had previously entered a caveat. His accompanying specification declared the invention to consist in—

> **"Forming the plate and gums to which the teeth are attached, of rubber or some other elastic material, so indurated as to be rigid enough to yield a little to the motions of the mouth, and in one piece, the teeth being imbedded in the elastic material while the material is in a soft condition, and then baked with the gums and plate, so that the teeth, gums, and plate will all be connected, forming, as it were, one piece."**

This application for a patent was rejected on the 19th of May next following, and the applicant was referred to two printed publications, one suggesting the use of gutta-percha as a base for artificial sets of teeth, and the other suggesting pastes, analogous to porcelain paste, as well as gutta-percha. Cummings then amended his specification by striking out all reference to gutta-percha or other merely elastic material, disclaiming the use of gutta-percha, and any material which is merely rendered plastic by heat and hardened by cooling, and he claimed the improvements in sets of mineral, or other artificial sets of teeth, which consists in combining the teeth with a rubber plate and gums which, after the insertion of the teeth, are vulcanized by Goodyear's process, or any other process, forming thereby a cheap, durable, and elastic substitute for the gold plates theretofore used. This amendment, however, proved ineffectual. The application for a patent was again rejected, and a third rejection followed a reconsideration for which the applicant had asked. This third rejection was on the 3d day of February, 1856. From that time onward for several years, indeed until the patent was finally granted, the evidence very satisfactorily shows that Dr. Cummings was in a condition of extreme poverty, utterly unable to bear the necessary expenses of prosecuting his case further. But he did not withdraw his application. He did not ask for a return of part of the fee he had paid, nor by any act of his did he indicate acquiescence in the unfavorable action of the Patent Office. On the contrary, he continued to assert his expectation of ultimately obtaining a patent, formed plans for his own action after it should be obtained, and complained of what he supposed to be the negligence of his solicitor. The proof of his extreme poverty is ample. His ill-health interfered with his working successfully in the line of his profession, and his family was subjected to great privations. He seems never to have had any considerable money. He borrowed sometimes small sums to purchase underclothing for himself. He made frequent applications to his friends for advances to enable him to prosecute his application for a patent, offering as a compensation for such advances sometimes one-quarter and sometimes one half of the patent when obtained. He appears never to have remitted his efforts until, in 1864, he induced Dr. Flagg, who had been his partner in former years, and Dr. Osgood to advance, first, one hundred dollars, and afterwards, seven hundred and twenty dollars, by means of which the patent was obtained. Even then he had not the twenty dollars necessary to be paid when it was allowed. For the assistance he thus received he gave one quarter of his invention. Before this time, between the third rejection of his application and his obtaining the advances mentioned, everything was done which was within his power. In February, 1859, in the midst of his pecuniary embarrassments, his solicitor applied to the Patent Office, not for a return of any portion of the fee paid, nor for a withdrawal of the application, but that the specification and one drawing might be sent to him. This request was refused. An attempt was then made for an appeal to the board, but that not being allowed by the commissioner, nothing further was done in the Patent Office until the applicant was enabled by the funds obtained from Drs. Flagg and Osgood to renew his endeavors. Then, on the 1st of March, 1864, he presented a petition for the grant of a patent to himself for the same invention which he had endeavored to secure in 1855, (the application for which remained in the office unwithdrawn), and accompanied his petition with a specification and drawings corresponding exactly with those he had previously made. This final effort was successful. The office practically acknowledged that the prior rejection had been an error, and declared that, in justice to his rights as an inventor, the admission of his claim, limited to the use of hard rubber or vulcanite, as he had before limited it, would not be objected to. Accordingly the patent was granted on the 7th of June, 1864, and by sundry conveyances it subsequently became vested in the complainants. Two surrenders and reissues have since been made, the last dated March 21, 1865, and it is for an alleged infringement of this second reissue that the present suit has been brought. The bearing of this history upon the merits of the controversy will appear as we proceed to examine the several defenses set up.

Among these the one perhaps most earnestly urged is the averment that the device described in the specification was not a patentable invention, but that it was a mere substitution of vulcanite for other materials which had previously been employed as a base for artificial sets of teeth, a change of one material for another in the formation of a product. If this is in truth all that the thing described and patented was; if the device was merely the employment of hard rubber for the same use, in substantially the same manner and with the same effect that other substances had been used for in the manufacture of the same articles, it may be conceded that it constituted no invention. So much is decided in Hotchkiss *vs.* Greenwood, 11 How., 248. But such is not our understanding of the device described and claimed. In the specification it is declared that the invention—

> "Consists in forming the plate to which the teeth, or teeth and gums, are attached, of hard rubber or vulcanite, so called, an elastic material possessing and retaining in use sufficient rigidity for the purpose of mastication, and at the same time being pliable enough to yield a little to the motions of the mouth."

This is immediately followed by a description of the manner of the proposed use; that is, of making the hard-rubber plates, and the claim, as stated, is " the plate of hard rubber or vulcanite, or its equivalent, for holding artificial teeth, or teeth and gums, substantially as described," that is plainly, formed as described. The invention, then, is a product of manufacture made in a defined manner. It is not a product alone separated from the process by which it is created.

The claim refers in terms to the antecedent description, without which it cannot be understood. The process detailed is thereby made as much a part of the invention as are the materials of which the product is composed. We shall not quote at large the description of the mode of making the plate. Such a quotation would unnecessarily prolong this opinion. It plainly shows a purpose of the inventor to secure what had not been secured before—a combination of a plate with artificial teeth, or with gums and teeth, in such a manner as to be free from the objections and defects or inconveniences attending the method before practiced of attaching such teeth to a metallic plate fitted to the roof of the mouth. Some of these objections are stated—such as expense, hurting the mouth, impeding mastication, and obstruction to perfect articulation. In carrying out the purpose proposed the materials employed were all old. The teeth, the wax, the plaster, the moulds, the soft rubber, and the hard rubber were none of them new. It is also true that the steps in the process were not all new. Plaster had been used for formation of moulds. The process of forming a plate by the use of such moulds was well known, and so was the process of converting a vulcanizable compound into vulcanite by heating it and allowing it to cool in moulds. But the process of Dr. Cummings extended beyond the use of known materials and the employment of the processes mentioned. It was vulcanizing soft rubber in a mould and in contact with artificial teeth inserted in place into it while it remained in a soft condition. It was well described by the circuit judge as "the making of a vulcanite dental plate out of a vulcanizable compound into which the teeth were imbedded in its plastic condition, and the rubber compound, with the teeth thus imbedded in it, afterwards vulcanized by heat, so that the teeth, gums, and plate should be perfectly joined without any intervening crevices, and the plate should possess the quality of hard rubber or vulcanite." The combination thus resulted in a manufacture which was "one piece." If, then, the claim be read, as it should be, in connection with the preceding part of the specification, and construed in the light of the explanation which that gives, the invention claimed and patented is "a set of artificial teeth as a new article of manufacture, consisting of a plate of hard rubber, with teeth, or teeth and gums secured thereto in the manner described in the specification, by imbedding the teeth and pins in a vulcanizable compound, so that it shall surround them while it is in a soft state, before it is vulcanized, and so that when it has been vulcanized the teeth are firmly and inseparably secured in the vulcanite, and a tight joint is effected between them, the whole constituting but one piece." It is evident this is much more than employing hard rubber to perform the functions that had been performed by other materials, such as gold, silver, tin, platinum or gutta-percha. A new product was the result, differing from all that had preceded it, not merely in degree of usefulness and excellence, but differing in kind, having new uses and properties. It was capable of being perfectly fitted to the roof and alveolar processes of the mouth. It was easy for the wearer and favorable for perfect articulation. It was light and elastic, yet sufficiently strong and firm for the purposes of mastication. The teeth, gums, and plate constituting one piece only, there were no crevices between the teeth and their supporters into which food could gather, and where it could become offensive, and there could be no such crevices so long as the articles lasted. They were unaffected by any chemical action of the fluids of the mouth. Besides all this, they were very inexpensive as compared with other arrangements of artificial teeth. To us it seems not too much to say that all these peculiarities are sufficient to warrant the conclusion that the device was different in kind or species from all other devices. We cannot resist the conviction that devising and forming such a manufacture by such a process and of such materials was invention. More was needed for it than simply mechanical judgment and good taste. Were it not so, hard rubber would doubtless have been used in the construction of artificial sets of teeth, gums, and plates long before Cummings applied for his patent. To find a material, with a mode of using it, capable of being combined with the teeth, in such a manner as to be free from the admitted faults of all other known combinations, had been an object long and earnestly sought. It had been a subject for frequent discussion among dentists and in scientific journals. The properties of vulcanite were well known, but how to make use of them for artificial sets of teeth remained undiscovered and apparently undiscoverable until Cummings revealed the mode. But when revealed its value was soon recognized, and no one seems to have doubted that the resulting manufacture was a new and most valuable invention. The emient dentists and experts examined in this case uniformly speak of it as such. Not one has ventured to testify that it was not an invention. They speak of it as "a novel and desirable thing;" as "the greatest improvement in dentistry" made in many years, and as an invention which is "a great benefaction to mankind, whereby both health and comfort are promoted." The evidence also shows that it has wrought a revolution in dental practice, and that many thousands of operators are using it in preference to older devices. All this is sufficient, we think, to justify the inference that what Cummings accomplished was more than a substitution of one material for another—more than the exercise of mechanical judgment and taste—that it was, in truth, invention. Undoubtedly the results or consequences of a process or manufacture may, in some cases, be regarded as of importance when the inquiry is whether the process or manufacture exhibits invention, thought, and ingenuity. Webster, on the subject-matter of patents, page 30, says, "The utility of the change, as ascertained by its consequences, is the real practical test of the sufficiency of an invention, and since the one cannot exist without the other, the existence of the one may be presumed on proof of the existence of the other. Where the utility is proved to exist in any degree, a sufficiency of invention to support the patent must be presumed."

We do not say the single fact that a device has gone into general use, and has displaced other devices which had previously been employed for analogous uses, establishes in all cases that the latter device involves a patentable invention. It may, however, always be considered, and when the other facts in the case leave the question in doubt, it is sufficient to turn the scale.

We have therefore considered this branch of the case without particular reference to Hotchkiss *vs.* Greenwood, 11 How., 248. The patent in that case was for an improvement in making door and other knobs for doors, locks, and furniture, and the improvement consisted in making them of clay or porcelain, in the same manner in which knobs of iron, brass, wood, or glass had been previously made. Neither the clay knob nor the described method of attaching it to the shank was novel. The improvement, therefore, was nothing more than the substitution of one material for another in constructing an article. The clay or porcelain door-knob had no properties or functions which other door-knobs made of different materials had not. It was cheaper and perhaps more durable, but it could be applied to no new use, and it remedied no defects which existed in other knobs. Hence it was ruled that the alleged improvement was not a patentable invention. The case does decide that employing one known material in place of another is not invention, if the result be only greater cheapness and durability of the product. But this is all. It does not decide that no use of one material in lieu of another in the formation of another can, in any case, amount to invention or be the subject of a patent. If such a substitution involves a new mode of construction, or develops new uses and properties of the article formed, it may amount to invention. The substitution may be something more than formal. It may require contrivance, in which case the mode of making it would be patentable, or the result may be the production of an analgous but substantially different manufacture. This was intimated very clearly in the case of Hicks *vs.* Kelsey, 18 Wall., 670, where it was said "the use of one material instead of another in constructing a known machine is, *in most cases*, so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention, *unless* some new and useful result, as increase of efficiency, or a decided saving in the operation be obtained." But where there is some such new and useful result, where a machine has acquired new functions and useful properties, it may be patentable as an invention, though the only change made in the machine has been supplanting one of its materials by another. This is true of all combinations, whether they be of materials or processes. In Crane *vs.* Price, 1 Webster's Patent Cases, 394, where the whole invention consisted in the substitution of anthracite for bituminous coal in combination with a hot-air blast for smelting iron ore, a patent for it was sustained. The doctrine asserted was that if the result of the substitution was a new, a better, or a cheaper article, the introduction of the subtituted material into an old process was patentable as an invention. This case has been doubted, but it has not been overruled, and the doubts have arisen from the uncertainty whether any new result was obtained by the use of anthracite. In Kneass *vs.* The Schuylkill Bank, the use of steel plates instead of copper for engraving was held patentable. So has been the flame of gas instead of the flame of oil to finish cloth. These cases rest on the fact that a superior product has been the result of the substitution, a product that has new capabilities and that performs new functions. So in the present case the use, in the manner described, of hard rubber in lieu of the materials previously used for a plate, produced a manufacture long sought for but never before obtained—a set of artificial teeth, light, and elastic, easily adapted to the contour of the mouth, unaffected by the chemical action to which artificial teeth and plates are subjected when in place, clean and healthy, —peculiarities which distinguish it from everything that has preceded it. These differences, in our opinion, are too

many and too great to be ascribed to mere mechanical skill. They may justly be regarded as the results of inventive effort, and as making the manufacture of which they are attributes a novel thing in kind, and consequently patentable as such.

A second objection urged by the defendant against the validity of the complainant's patent is alleged want of novelty of the invention, and a strenuous effort has been made to convince us that, although hard rubber had not been used in the manner described for the production of the manufacture, equivalent materials and processess had been, and that a plate substantially the same as that of Dr. Cummings had been made before his improvement. We are not however, convinced. The patent itself is a prima facie evidence that the patentee was the first inventor, at least it casts upon him who denies it the burden of sustaining his denial by proof. We do not find such proof in the case. Though the patent was not granted until June 7th, 1864, the invention was completed as early as April 12th, 1855, when the application for a patent was made. Indeed, as we have noticed, a caveat to protect it was filed on the 14th of May, 1852, which clearly foreshadowed the invention. Yet taking the spring of 1855 as the time when it was completed, we find nothing in the proofs to justify a conclusion that Dr. Cummings was not the first inventor. It would answer no good purpose to review the voluminous evidence supposed to bear upon this branch of the case. We shall refer only to that which is deemed most important, and which has been most pressed upon us in this argument. Of the English patent of Charles Goodyear it is enough to say that, though the provisional specification was filed March 14th, 1855, the completed specification was not until the 11th of September following. It was, therefore, on the last mentioned date that the invention was patented.

The experiments made by George E. Hawes, it must be admitted, closely resembled the process described in the reissued patent to the complainants. He cast in moulds sets of teeth on a tin base, in a manner very like that in which the vulcanite plate is formed by the Cummings process. But the experiments resulted in nothing practical. Hawes cast sets of teeth for the lower jaw only, the weight of the metal making the plate unfit for the upper. In consequence of the shrinkage of the metal in cooling, a tight joint could not be obtained between the teeth and the base. The sets were, therefore, liable to become offensive in conseqence of deposits of food and the secretions of the mouth in the crevices. The shrinkage also prevented a close fitting of the plate to the roof of the mouth, and the tin base was affected by the chemical action of the secretions, In consequence of these and other objections the manufacture was soon abandoned, and it may properly be considered an abandoned experiment. It not only was not the same manufacture as that of Cummings, but it was not suggestive of it, and Dr. Hawes, who cast the tin plates, testifies that the use of vulcanite for dental purposes is the greatest improvement in his profession that he knew of in twenty-five years. He adds "that vulcanite may be used by dentists in many ways which could not be accomplished by tin or platinum." In his opinion, therefore, the cast tin base was not substantially the same thing as the Cummings manufacture. So, also Dr. Royce, who cast plates of tin for artificial teeth in a manner very similar to that of Dr. Hawes, testifies that the solid tin base was found practically unfit for the purpose, except in rare instances. He made but a few sets, none after 1850, and adopted the vulcanite, agreeing to pay for a license to use it in manufacturing dental plates.

We need go no farther into a consideration of the various devices and publications offered to show that the manufacture patented was known before Cummings invented it. Suffice it to say, that none of them, in our opinion, suggest or exhibit in substance such a manufacture. The defense of want of novelty is therefore, not sustained.

It is further insisted by the defendant that the reissued patent on which this suit is founded is not a patent for the same invention which was described in the specification of the original patent, and, therefore, that the reissue is unauthorized and void. To sustain this position the defendant must overcome the presumption against him arising from the decision of the Commissioner of Patents in granting the reissue, and this he can do only by showing from a comparison of the original specification with that of the reissue that the former does not substantially describe what is described and claimed in the latter. This must plainly appear before we can be justified in pronouncing the reissued patent void. But this, in our judgment, does not appear. The first specification describes a set of artificial teeth having a hard-rubber plate made by a process substantially the same as that indicated in the latter patent. The description of the process is not quite so minute, but it is sufficiently full to be understood and to enable an operator to make the manufacture. Certainly it is not another process, and as its result is the same, it is impossible to hold that the reissued patent is for a different invention from the one protected by the original patent. It is true the specification of the reissue describes also another process not described in the specification of the first, namely a mode of making the moulds, but that is not claimed as a part of the invention.

The remaining defenses to the bill rest mainly on the assumption that the new petition presented to the Patent Office in 1864 cannot be regarded as a continuation of the application made for a patent on the 12th of April, 1855. But this cannot be conceded. The history of the application, as we have given it, forbids such an assumption. No act of Cummings amounted to a withdrawal of his first petition or to an acquiescence in its rejection. It is true he filed a second petition in 1864, but he accompanied it with substantially the specification that remained in the office and with the same drawings. It was a mode of procuring another consideration of his rejected claim, and the commissioner regarded it as such. The act of March 2d, gave him authority thus to regard it. He replied to the application that his claim was embraced in an application filed by him in 1855, and rejected for want of novelty, admitted that it had been improperly rejected, and suggested an amendment to make it correspond with his former amended claim. It is impossible, in view of these facts, to regard the effort to obtain a new patent in 1864 as a new and independent application, disconnected from the application made in 1855. It was but one stage in a continuous effort. In Godfrey *vs.* Eames, 1 Wall., 317, the first application was actually withdrawn and a new petition was presented at the time of the withdrawal, with a different description of the invention, but as the thing patented under the second might have been engrafted as an amendment of the first, it was ruled that all the proceedings constituted one application. This court said, "If a party choose to withdraw his application for a patent, and pay the forfeit, intending at the time of such withdrawal to file a new petition, and he accordingly does so, the two petitions are to be considered parts of the same transaction, and both as constituting one continuous application." We are not aware that filing a second petition for a patent, after the first has been rejected, has ever been regarded as severing the second application from the first and depriving the applicant of any advantage he would have enjoyed had the patent been granted without a renewal of the application. The contrary was decided by the Circuit Court for the Southern District of Ohio, in Bell *vs.* Daniels, 1 Fisher, 372, and in Blandy *vs.* Griffith et al., 3 Fisher, 609. And these decisions are founded in justice and sound reason.

If, then, as we think it must be held, the proceeding to obtain the patent was a continuous one from 1855 until it was granted; if the application of 1855 is not severable from the proceedings of 1864, there is no foundation whatever for the allegation that the invention was abandoned to the public, and that it was in public use or on sale for more than two years before the inventor's application. The first use of it proved, by any other than Dr. Cummings, was in 1859, and there is no evidence that this was with consent. And the proof respecting his health and pecuniary condition, together with his constant efforts to obtain the necessary means to prosecute his right, rebuts all presumption that he ever abandoned, actually or constructively, either his invention or his application for a patent. That he never intended an abandonment of his invention is perfectly clear, and it was not his fault that granting the patent was so long delayed.

The conclusion of the whole matter is that the patent is a valid one, and, therefore, that the decree of the circuit court should be affirmed.

The decree of the circuit court is affirmed.

Mr. Justice **Bradley**, dissenting.

I dissent from the judgment of the court in this case on the ground that the patentee having duly made his application for a patent in 1855, and the same having been three times rejected, must be considered as having abandoned the same, inasmuch as no further effort was made to obtain a patent until eight years afterwards, without any pretence that the patentee was engaged in perfecting his invention, and in the meantime the invention which he claims as his had come into general public use. The application for a patent made in 1864 was a new and independent application and should be treated as such. As the public had enjoyed the use of the invention for more than two years prior to this application the patent should be declared invalid. Great injustice will, in my judgment, be done to the public to allow a patent obtained under such circumstances to stand. The public had a right to suppose that no further application would be made. The levy of a tribute now on all the dentists of the country who have brought the plate into public notice and use, seems to me a species of injustice. The delay of the patentee, in fact, is made to operate to his benefit instead of his prejudice; his patent being made to run eight years longer than it would have done had it been granted when first applied for. So that the public is still further injured by sustaining the patent as finally granted. It is too common a case that associated companies, in order to maintain some valuable monopoly, look about to see what abandoned invention or rejected application, or ineffective patent, can be picked up, revamped, and carried through the Patent Office; and by the aid of ingenious experts and skillful counsel succeed in getting the desired protection. I think that the courts ought to be strict in maintaining the rights of the public in such cases. And the present case seems to me to be one in which we ought to hold the patent invalid as against those rights.

Mr. Justice **Miller** and Mr. Justice **Field** concur in this opinion.

—*Dental Advertiser.* D. W. Middleton, *C. S. U. S.*

ARTICLE V.

Concerning the Causes of Failures in the Use of Cohesive Foil, the Mallet, Etc.

BY H. L. SAGE, D. D. S.

Thoroughness is, doubtless, an element of success which does not enter into the practice of one-half of those who constitute the numerical force of the dental profession. Is not this apparent to any one who has himself the grace, the ability, and the determination to utilize such an element, and to judge by observation and experience of the character of an operation?

By success, is not meant *pecuniary plethora,* but that which compasses the ends which should be sought—the best possible results which are attainable by conservative treatment, considered with regard to dental practice.

Success, then, being contingent on such an issue, its attainment appears to be the exception and not the rule, with very many.

In this connection, reference will be made to one of the directions in which failures are said to be so common,—the use of cohesive foil in operative dentistry,—because, as some maintain, we have gone to extremes in its employment, and are not eclectic enough in our practice as regards the blending of old and well tried methods, with those of more recent date.

As to failures connected with the use of cohesive foil it may be well to canvass the subject sufficiently to determine whether the fault is in the material itself, or the manner of its employment.

Whether better operations every way, may not be made with this preparation of gold than with any other, is hardly a question worthy of discussion, when considered with regard to beauty of finish, durability, and the effect to check the progress of dental caries, and this, aside from the influences attended upon defectively organized tooth structure, and constitutional tendencies, which in themselves, predispose to, or invite an attack of caries ; so that here, mere mechanical manipulation will be considered, both with regard to the preparation of the cavity and for the reception of the gold, and the manner of its introduction, prophylactic treatment and constitutional effects, so far even, as they have a bearing upon the success of an operation, not entering into consideration in this paper.

Some of our confreres are assuming that we should return to first principles; to the old fashioned methods of operating; that what we have been wont to consider improvements in practice have proved unsuccessful retrograde movements, many of them at least ; and that among these are the excessive use of cohesive foil and mallet force, the too frequent restoration of contour, the abandonment of permanent separations, etc.

There may have been some force in these assumptions, as related to the employment of heavy foil, and the almost total abandonment of V shaped spaces in crowded teeth.

That in many cases, permanent separations are desirable is doubtless true, but that in most it is not adviseable to make them is also true.

Some, the writer among the number, are inclined to think that careless and imperfect operators are responsible for most of the failures, leaving out of view defectively constituted teeth, and local or chemical action.

It is probably safe to assert, that more teeth, in proportion to the number filled, have been saved by the use of cohesive foil and mallet force, during the time they have been in vogue, than in the same length of time previously by the employment of soft foil and the old fashioned methods of operating; and thousands of teeth are now saved and salvable, that could not have been preserved, and are not capable of being by other means.

Then again, great improvements in the preparation of cavities have been made; more thorough following up and cutting out of interstitial decay, the blending of contiguous cavities, etc., have been practiced. So far as filling is concerned, more perfect results can be attained with foil which is cohesive than with other preparations of gold, and that too in every case. But great care must be exercised.

It may be that less care, certainly less time and material is required in the use of soft foil, than is requisite when the cohesive is employed. But that is no argument in favor of the former, unless as valuable results can be had with it as with the latter.

Do perfectly moisture-tight fillings of non cohesive foil often greet our vision? No.

Witness the discoloration about the labial and palatal surfaces of many teeth in which soft foil fillings are remaining, produced by the ingress of fluids about the borders of cavities, and in which decay is going on under the gold. When cohesive foil is used, this is entirely unnecessary—always in the case of the front teeth inexcusable, though caries may work up to and undermine a properly inserted filling.

Do or can soft or non-adhesive foil fillings, (using the terms synonomously,) be made to present that polished and highly finished surface so pleasing to the eye, so cleanly, and so capable of preventing or repelling the lodgment of foreign matters, which renders well condensed fillings of cohesive foil superior to all others? No.

Are not hard, well finished and polished surfaces required in order to permit of perfect cleanliness about the borders of the filling? They are.

Can they be made free from indentations, roughness and porosity with soft foil? Hardly.

Is it not essential that a filling should present as smooth a surface, and be as highly polished as the enamel, in order to obtain the best results? It is.

Is it not a very difficult matter to produce such a surface with soft foil? It is.

By soft foil is meant that which has not been made adhesive by subjecting it to the action of heat.

Will soft foil fillings wear well when subjected to much friction? No.

Can contour fillings be made of soft foil? No—and semi-adhesive is not entirely reliable for such work.

Because the borders of a cavity have been broken down, nicked, disintegrated or roughened by the employment of too much force in malleting, that is, by carelessness, is the abuse of a good thing an argument against its use? Many a border has been thus fractured, and ingress thus afforded for agents productive of decay, at the cervical border especially.

Extreme care in packing and condensing is always necessary to prevent failures at this point. And the same may be said, with less stress perhaps, of the labial or buccal and palatal or lingual borders.

A bicuspid tooth, with a cavity involving the proximal and grinding surface, and extending to or under the margin of the gum, so as to leave at the cervical border a narrow neck of enamel, is a case in point.

A little digression, a word, as to the rubber dam. It is well before preparing the cavity to adjust this appliance.

The advantages are obvious. A better view of the cavity is obtained, and the relative proximity of caries to the pulp more easily noted. Time is saved; one is not under the necessity of mopping out the saliva, or removing the detached debris by the slow and somewhat painful process of hoeing it out, for the chips or powdered dentine can be instantly removed by one puff with the air syringe.

The cavity being kept perfectly dry, the sensitiveness of the dentine attendant upon the removal of the decayed portion is, by the absence of moisture, very much lessened; and lastly, when the gold is introduced, you need not labor under the constant terror and disadvantage of being threatened or overwhelmed by the fluids of the mouth, and you will be much more likely to produce a fine operation, by means of more thorough and deliberate packing and perfect welding. Of other advantages pertaining thereto, it is not necessary to speak.

A word as to wedging.

Gradual wedging is preferable in most cases, for the obtainment of room, if sufficient space is not already gained. It is less injurious to the tissues than rapid wedging, and most patients can better bear moderate pain longer continued than that which is extreme, though lasting but a moment, and will give you the credit of being less barbarous, if you adopt the former method in preference to the latter; a result borne out by observation and tending much to enhance the personal popularity of the dentist, as the avoidance of all unnecessary pain will naturally do.

After obtaining the requisite amount of space, and subsebuent to adjusting the dam, a wedge may be inserted with the fingers at the base of the cavity; but in no instance should it be allowed to overlap the latter—a disadvantage that sometimes pertains to rapid wedging, for the reason that then, the wedge is indispensable during the operation, even though the cavity may extend under the margin of the gum. Though a wedge here is useful not only for the purpose of steadying the tooth to be filled, maintaining the space already gained, preventing injury to the dam by the burs of the engine, and as a protection to the cervical border while malleting and introducing the filling, yet it is often the case that the caries extends so far that the wedge can not be inserted without covering a portion of the cavity, or unduly lacerating the gum and causing unnecessary suffering; it is then productive of more harm than good for obvious reasons, and to be avoided if possible; besides the operation can be made perfect if the wedge is dispensed with,—an advantage connected with gradual wedging.

When the borders of a cavity are fragile or jagged, they should be cut or trimmed until firm or at least well defined margins are secured; for when they are very thin, it is not always possible to obtain sufficient strength, especially in the grinding teeth, without cutting away extensively and restoring with gold; and in such cases, the pulp is often nearly or quite exposed, so that treatment has to be instituted by capping or otherwise, preliminary to the insertion of the filling.

But to simplify. If the tooth is a bicuspid, let the cavity under consideration involve the proximal surface, with the coronal floor broken down or so thin as to render it liable to fracture in mastication. In the latter case it is much better to cut it away; for a grinding surface of welded gold is much preferable to one composed of an attenuated floor or roof of tooth structure, while its removal renders the operation of filling with adhesive foil less difficult, and success more certain, so far as conservation of the tooth is concerned; but when non-adhesive foil is inserted, it is more necessary that this weak grinding surface should be retained, if it still remains, in order to secure the filling and prevent it from wearing away by the friction attendant upon mastication.

After removing the carious and friable portions, if retaining points are made use of, (these or grooves seeming to be necessary for anchorage) two, at the bottom of the cavity, near the junction of the dentine and enamel, will suffice—

one pointing towards the lingual and the other in the direction of the buccal surface, with a third larger one in the back portion of the cavity near the grinding, and pointing obliquely upward or downward, according as the tooth is an inferior or superior one. To these may be added, when the walls are of sufficient thickness to permit it, a narrow groove or under cut near the buccal and lingual border, and extending a short distance from the cervical portion. With these precautions, dove-tailing on the grinding surface is unnecessary, and would cause weakening of the tooth, without any compensating advantage.

Now if the foil is not made harsh by over heating, adhesive or perhaps more properly cohesive as regards terms, is the best that can be employed for filling the retaining points and building up to and overlapping the delicate cervical border of the cavity, and that too, by the use of mallet force, and by careful packing.

Pluggers with small points, small, loosely rolled pellets and gentle malleting will enable one to perfectly cover the borders of the cavity, solidly, without leakage, fracture or pulvurent tooth substance.

But this cervical border should present a flat or level surface, that is, on the short diameter, with more or less concavity at the buccal and palatine angles; not a sharp ragged edge liabel to break down or cut the gold, while applying the force necessary to condense it.

If ropes are used, they should be small and loosely rolled (with a napkin) especially for adaptation to the bottom and sides of the cavity. They may be annealed and cut into pellets of various lengths, according to the requirements of the case.

It is quite superfluous to cut before annealing, and then pass the gold through the flame of the lamp pellet by pellet. It requires more time than if the rolls of foil are annealed first and cut afterward, and they will work nicely without this extra trouble, if the ropes are not made too hard by over heating and rolling too tightly. When large pellets are used, of course time is not so much of an item. But most operators use too large masses of gold, and pluggers with too large condensing surfaces about the borders of cavities. Herein lies one cause of failure.

Small pellets, small plugger points, and light blows with the mallet, are very much the best for packing and condensing the gold about the walls of a cavity, and will make a perfect operation, with no crumbling, fractured walls; and this whether ropes cut into pellets, or ribbons are used, the sides of the filling meanwhile being kept a trifle higher than the central portions. For filling about the walls of ordinary cavities, a sheet of number four should make at least five or six full length, loosely rolled ropes, to be cut into pellets.

Large pellets or full length ropes, not too tightly rolled, may be worked into the central portions of the filling, with pluggers presenting larger serrated surfaces, and by more pronounced mallet force.

If this method of operating is carried out until the filling is completed, there need be no failures with cohesive foil, so far as success depends on the operation itself.

To repeat, the majority of operators are in the habit of trying to condense too large masses of foil, use pluggers with too large condensing surfaces in contiguity to the walls of cavities and exercise too little care in adapting the gold thereto so that not only more force is required to weld it, but the danger of disintegrating the walls is much increased.

Besides caverns or spaces are often left about the borders, or contiguous to the walls of the cavity, owing to imperfect packing and welding, and choking up of the material from the before mentioned causes.

It is not surprising that so many failures occur to one who views the careless and hurried manner in which cohesive foil is often manipulated, even by many who claim to be first and stand high as operators.

Careless D. D. S.'s, and in exceptional cases others, may be able to manipulate soft foil to the best advantage. Very careful ones should be competent to attain the best results with cohesive foil.

There is one other point to which attention may be briefly directed.

Some operators are in the habit of packing the inner portions of a filling quite loosely, even about the walls of a cavity.

They think perhaps, that if the gold is well condensed near the surface of a filling, and in the retaining points, it is quite unnecessary to be particular in other respects.

Take, for example, a large grinding surface cavity in a molar, with a well condensed and moisture tight gold filling so far as the outer surface is concerned, but with the inner portions imperfectly adapted to the walls of the cavity, and this, whether non-adhesive or adhesive foil is employed; for some commence with one and finish off with the other.

Such a grinding surface filling may do good service for a time, though it certainly does not represent a fine operation through and through, nor, in many cases, a safe one.

If the tooth subsequently decays on the proximal surface, and is not seasonably filled, the caries may extend under and about the filling in the grinding surface, so as to endanger the pulp and cause discoloration of the tooth, if the original cavity was a large one, and thus necessitate the removal of operator number one's filling in order to make a safe thing of it.

Here is an under cut by caries, facilitated by a substratum of soft, porous, spongy and loosely packed gold and preceded in the first instance, it may be, by an under cut in prices. Have not such cases fallen under the observation of most?

Do you wonder that A can operate for less money than B, and that his patients think him very reasonable in his charges?

The mystery is solved! A's filling is hard without, and very, very soft within. He charges less and saves his time and strength, but slights the operation in order to do it.

He makes more money, perhaps gains more patients than B, because he acts on the principle that an under cut in price may be easily balanced by an under cut in quality, provided the defect don't appear on the face of it until a reasonable length of time has elapsed.

But if in a similar case, the main portion of a filling is composed of oxy-chloride, in the event of decay appearing on the proximal surface, the same care would need to be exercised, lest the oxy-chloride becomes exposed, and softened by the fluids of the mouth.

This affords an objection to filling a considerable portion of a cavity with this material. But of course this is neces-sary where it is used as a capping.

But these observations will suffice, though presenting but a partial and imperfect view of the points under considera-tion.—*Dental Register.*

ARTICLE VI.

On Congestion of the Pulp.

BY PROFESSOR GEORGE T. BARKER, D. D. S.

Probably one of the most frequent pathological conditions which presents in dental practice, is that to which I have given the above title, and its very frequency, as a sequence of dental operations, makes it imperative that we should have a clear idea of the etiology, pathology, and therapeutical treatment indicated.

Causes.—These are both exciting and predisposing. Thus, mechanical or chemical abrasion may induce this condition, by exposure of a surface of dentine to the action of the fluids or solids taken into the mouth, or formed therein, or generated as the result of chemical solution, which, producing irritation of nerve fibrilla develops the disease. Probably the most exciting cause of congestion of the pulp is the exposure of portions of dentine to the action of substances fluid or solid, after the removal of decay, or the introduction of a metallic filling, or the action of dental caries, and it may also be induced by mechanical violence, but, when thus occasioned, it soon terminates in inflammation, peridontitis, periostitis of some writers. Another may be adverted to, viz., oxychloride of zinc fillings, which by chemical union, for some days after introduction, with particularly one of the elements of tooth structure, water, induces the morbid condition.

Imperfect occlusion of a tooth may develop congestion of the pulp, particularly if there is any existing predisposition arising from modification of the blood stream from syphilis, rheumatism, anæmia, hysteria, gout, scrofula or general debility. Of the last-named condition, I would say, that almost the first symptom of mal-nutrition is congestion of not one, but several pulps, and the patient speaks of what he calls neuralgic pains in face, in teeth, in eyes and head, flitting from one part to another, without regularity, and of great intensity. Thermal changes, by induction of elevated or depressed temperature to the pulp, through the medium of exposed tooth surface, or a good conductor, as a metallic filling, is doubtless the most fruitful cause of the disorder under consideration.

Clasps on dental substitutes, fitting closely around teeth, may, by interference with independent motion of such teeth in their sockets, establish congestion of pulp, but here, as from mechanical violence, it soon terminates in either structural degeneration, death of pulp, periostitis, alveolar abscess, or more rarely, exostosis of cementum. When the last-named condition results, the congestion of pulp may be indefinitely prolonged.

The morbid condition may also result from application of agents to obtund sensitive dentine, or long-continued use of certain remedies, as the mineral acids, the alkalies, mercury, iodine, and many other potent remedies, or from exposure to damp climate, or to very cold winds blowing upon the face.

Symptoms.—It may be truly said, that in the earlier stages there is but one diagnostic sign, viz., *pain*, and this pain it is extremely difficult for the patient to locate. This is not universally the case, but commonly, when several teeth have been filled, the patient states that while eating, or shortly afterwards, severe pain occurs upon one side, extending in different parts, and lasting fifteen or twenty minutes. In some there is no particular sensitiveness of any teeth to hot or cold fluids, but in others either one or the other will induce the paroxysm of pain. In the early stages there is no elongation or protusion of tooth from the socket, as that result only occurs when the congestion has passed into that of active inflammation, peridontitis therefore, while mal-occlusion, or gentle tapping or pushing of a tooth in its socket, will aid in the diagnosis, if peridontitis has been established, it will not aid in developing an irritated or congested pulp.

Occasionally the patient will indicate a particular tooth that feels full, and which he is certain is the one diseased—generally an incisor lower or perhaps a sound tooth ; therefore these statements should never influence the diagnosis, as the pain in the part is simply *reflex*, and depends for its expression on a distant irritant. In other cases the patient will indicate the tooth affected, and will describe the full feeling, and will add, "the pain usually commences and ends in that tooth." If the tooth thus pointed out has been subjected to any of the influences referred to in this paper, it is well to give the statement appropriate weight. If throbbing pain continues in any tooth for ten or fifteen minutes after application of either hot or cold fluids, it may be safely assumed that congestion of the pulp is present, and that, unless relieved, disorganization of pulp may occur, with its usual sequence before referred to. The gum structures usually show no signs of inflammation, and therefore do not aid in forming diagnosis.

Pathology.—Hyperæmia, diminished flow of blood in capillary vessels, which vessels are overcrowded with blood corpuscles, which pressing upon nerve fibrilla, interfere with their functions, hence the intermittent pain. There is also a tendency to effusion, and the plasma elaborated may, with the leucocytes and active cell elements of the pulp, be converted into one or more "pulp nodules," or may constitute the condition which we recognize as recession and calcification of the pulp. In all such pathological conditions, congestion of the pulp must occur, and the sequence is frequently seen in the abraded teeth of old persons, where a large portion of the pulp cavity is obliterated. In all cases of active congestion of the pulp, it must be remarked that there is a strong tendency to *stasis* of the blood from constriction of the engorged blood vessels at the appicial foramen, followed by disorganization of pulp tissue; or the congestion may, by contiguity of structure, involve the peridontium, and pass into acute inflammation of that membrane.

Treatment.—Immediate removal of primary irritant. If from thermal changes induced from metallic filling, it should be either removed and replaced with a non-conducting one, as gutta percha or Hill's stopping, or when a large gold filling is present on an approximate surface, I am in the habit of packing the space between the teeth with warm gutta percha, covering the metal plug entirely, allowing such covering, *if the pain ceases at once*, to remain two or three weeks, renewing it if necessary. If the metal filling is removed, it is well to dress the cavity with either creosote alone, or equal parts of creosote and tr. aconite root, placing over the applied dressing the ordinary red gutta perch temporarily. The dressing should be renewed every forty-eight hours.

Some of the worst cases of congestion of the pulp have occurred recently in my practice from the use of the oxychloride of zinc, known as German cement, and in most of them death of the pulp occurred, though every effort was made to preserve their vitality. Mechanical and chemical abrasion of teeth on grinding surfaces, with accompanying congestion of pulp, has been treated by me, successfully as follows: Place a small piece of wax carefully over the part that responds acutely to thermal changes, cover every part of the tooth with plaster-of-paris, and when it is hard, remove the wax, and into the "coffer-dam" place a few drops of deliquesced chloride of zinc, or a strong solution of nitric acid, allowing it to remain five or ten minutes. In many cases one application is all that is necessary. When an acid is used, an alkali should be applied in the coffer-dam before the plaster of-paris is removed. In not a few of these cases, relief is only obtained by the use of an anæsthetic (ether,) which allows the operator, during the period of narcosis, to drill through the dentine and remove the living pulp by the nerve broach. If congestion of pulp arises from the continued use of the remedial agents previously referred, it would be well to intermit them, or if from the diseases mentioned, the indications would be for the judicious use of the alteratives and tonics.

Mal-occlusion and badly fitting clasps should at once be overcome, and we should not fail to recognize that nature here, as in every part of the body, requires rest in order to get back to normal condition, and that any interference with or disturbance of functions or nutrition is more or less expressed by structural derangement.

I have said nothing of the congestion which not unfrequently, and I might, with sadness, say, we of Philadelphia have, as a result of attempt at saving exposed pulps by the most approved methods of capping. Why we are generally unsuccessful, no one can explain as yet, though it is probably due to the *food* we eat, the *air* we breathe, the *water* we drink, or *perhaps* our inefficiency in operating.(?) In such cases, the treatment is removal of the primary irritant and application of appropriate dressings already indicated, making every effort to save the pulp by a tolerant, non-conducting filling.—*Dental Office and Laboratory.*

ARTICLE VII.

The Use of Salicylic Acid in the Household.

BY DR. VON HEYDEN.

1. *Raw Meat.*—It frequently happens, especially in warm weather, that meat, particularly such as contains easily decomposed fat and blood, (tongues, etc.,) although other-

wise irreproachable, upon closer examination or upon boiling, gives off a disagreeable smell. This may easily be removed either by laying the meat, before cooking, in lukewarm water containing half to one gram of salicylic acid to the litre, or by throwing some small crystals of acid into the water during the boiling.

When it is desired to preserve meat for some days, it is recommended to lay it in a solution of salicylic acid in water, half to one gram to the litre; or to rub lightly salicylic acid in the meat, especially the bones and fat parts. The preservation, as the cleaning for the dressing, is done in the usual way.

Although meat treated with salicylic acid loses its red color on the exterior, it undergoes no change internally. Moreover, it becomes tender with less boiling.

2. *Milk.*—Pure cow's milk, to which dry salicylic acid (not in aqueous solution) has been added in the proportion of half to one gram to the litre, curdles at the ordinary temperature after about thirty-six hours, retaining its properties, the cream separating and yielding butter perfectly.

3. *Butter* kneaded with water containing half to one gram of salicylic acid to the litre, or packed in cloths saturated in such a solution, remains good longer than usual. Butter that has already become rancid can be improved by careful washing with aqueous solution of salicylic acid (two to three grams to the litre) and afterwards rinsing with pure water.

4. *Preserved fruits* (cherries, currents, raspberries, plums, apricots, peaches) may be prepared advantageouly, by placing layers of fruit and sugar alternately, without water, in a not very wide-mouthed pickle bottle, strewing over them a pinch of crystalized salicylic acid (about half a gram to a kilo of contents), closing the jar with parchment paper that has been steeped in solution of salicylic acid, and boiling the bottles in the ordinary way in a water-bath. Bilberries are best boiled without sugar, allowed to cool, filled into a narrow-mouthed flask, some crystalized salicylic

acid strewn over, corked, etc. Fruit thus preserved has been kept in excellent condition during two seasons. Another method is to lay over the surface of fruit preserved in bottles a closely-fitting piece of blotting paper that has been steeped in a strong solution of salicylic acid in rum. Preserved gherkins may be similarly treated. For those preserved in vinegar and sugar (*Essiggurken*) the salicylic acid is boiled with the vinegar, and when boiled poured over the gherkins. For salt gherkins (*sauer gurken*) the acid, half to one gram to the litre, is added during the boiling; in other respects the preparation is as usual.

5. *Preserved Vegetables* and similar articles may also have a small quantity of crystalized salicylic acid added.

6. *Fumigations.* - Dry salicylic acid, volatnlized from a hot plate, purifies the air and perfectly disinfects the walls of a closed room.

7. *Vessels, Corks,* etc., to which a disagreeable smell or taste attaches, are thoroughly purified by washing in solution of salicylic acid.

The solutions of salicylic acid for the above purpose are best prepared by rapidly boiling the acid in water, in the proportion of from one to three grams to the litre, and leaving to cool, Any excess that then separates is fit for fresh use; or if stirred up and used in suspension causes a corresponding increase in the action of the solution.—*The Pharmacist.*

ARTICLE VIII.

Adenoma of Soft Palate.

Dr. A. H. Smith, at a recent meeting of the N. Y. Pathological Society, presented a tumor removed by operation from the soft palate of a patient who had come to him from the interior of the State with a diagnosis of malignant disease. The growth projected but slightly into the mouth, but the whole of the space behind the velum on the right side, and the adjacent pharnyx was occupied. The growth was about the size of a butternut. About two years ago, the patient first discovered a small growth in the soft palate, which gradually increased until it became the size of an almond. At that time the physician who saw the case advised the application of caustic. The result was the formation of an eschar which, when separated, gave issue to a considerable amount of glary mucus-like fluid. The wound healed, and for a time it seemed as if the difficulty had entirely disappeared. A year ago last December the growth again commenced to show itself, and continued to increase until Dr. Smith saw him. He formed the opinion that the tumor was of that variety first described by Nelaton as adenoid. Extirpation was advised and performed accordingly. The operation was very simple, and consisted merely in the division of the mucous membrane over the tumor, and shelling it out with the finger pressed from behind. The only embarrassment was in consequence of the cicatrix, which had to be divided with the scissors. The patient during the operation was placed in Ross's position, with the head over the edge of the table. The recovery was rapid and complete.

Dr. Smith remarked that the clinical features of these tumors were slowness of growth, painless character, freedom from attachment to mucous membrane, and their non-liability to pass beyond the raphe of the soft palate.—*Medical Record.*

ARTICLE IX.

Atmospheric Anæsthesia.

If your readers desire the benefits of this unique plan of avoiding pain in minor surgery, let them read, and profit from, the following cases, the last two of many I have met:

1. R. W., male, aged thirty, complaining of felon on finger, which needs lancing. I ordered rapid and deep respiration, and after two minutes plunged the knife to the bone, making a full and free incision. Result, a slight twinge of pain.

2. Benjamin S.; complains of a decayed, aching molar. I directed the respiration, as before, and extracted with some difficulty. The patient, a stout young man, asked, "did you get it," declaring he felt no pain whatever, whereas he complained considerably before, in extracting a smaller tooth.

I have tried many cases thus with success, occasionally failing; I fully believe in the latter, because I could not obtain the requisite rapidity and deepness in respiration.

I have also tried, with success, the rapid and deep respiration of chloroform, permitting only two or three respirations, and operating immediately, as in the above cases.

—*Med. and Surg. Reporter.* M. J. Elby, M. D.

ARTICLE X.

Possible Dangers from Salicylic Acid.

It behooves the admirers of new remedies to be cautious in the use of this acid. M. Blandeau, of Paris, states that, according to dentists, this agent has injurious effects on the teeth. English observers have noticed its effect on the bones, and necrosis of the tibia has been assigned to its use. It evidently possesses considerable affinity for the calcareous salts of bone, as we see the urine loaded with lime salts in an ultra-physiological proportion, from the internal use of the acid. The salicylate of soda presents the same dangers.

If these facts are confirmed, and their verification should be easy, the therapeutical employment of salicylic preparations should be condemned.—*Med. and Surg. Reporter.*

EDITORIAL, ETC.

Comparative Anatomy.—Professor Harrison Allen, of the University of Pennsylvania, in a lecture recently delivered, a condensed form of which, prepared by Dr. C. C. Vanderbeck, is published in the *Medical and Surgical Reporter*, speaks of the primary principle and that of evolution as follows:

"ILLUSTRATIONS OF THE PRIMARY PRINCIPLE.—Development depends upon division of functional labor, *i. e.*, the more organs introduced to divide the labor of the body, the higher the animal. This is the best basis for physiological classification. In the very lowest animal only one kind of tissue exists, and the being is almost structureless. Yet all the primary functions, digestion, circulation, respiration, reproduction, excretion, are performed by such an animal. There is no localization or specialization of function; every part of the tissue is capable of performing all the mentioned functions. The amœba, a kind of rhizopod, which in turn belongs to the protozoa division of animals, is a good example. Higher up the scale animals begin to form a skeleton, one of the first differentiation that occurs. An œsophagus appears for the first time in the infusoria, the highest of protozoa. In the low forms of radiates there is no anus proper, the one opening into the cup-shaped alimentary canal answering as both a mouth and an anus. In the higher radiates an independent opening exists for the anus; alimentation and respiration both are performed by one canal in certain molluscs, respiration being carried on in that part equivalent to the pharynx in higher animals. In the human fœtus the intestinal canal exists before the respiratory organs; these may be considered, then, branches of the alimentary canal. Circulation, respiration, and excretion are performed by one organ in some low animals, especially in the entozoa. Thus it is seen that a whole group of functions may be carried on by one system or structure, and that the difference between a high and a low animal is in the division of labor, the differentiation of structure. The liver of the human adult does two things—forms bile, and also sugar, and in the fœtus is also concerned in respiration. Therefore, if we could conceive of a being higher than man, we would probably have the functions of the liver separated. The wolfian bodies in the human fœtus represent, for the most part, both the internal and external organs of generation of the adult. This is only one of the many examples of division of functional labor in the developed body as compared with the fœtus. Another illustration of this first law may be thus condensed: A well-formed kidney does not appear below molluscs; it is absent in articulates below myriapoda. In the ensozoa it it is replaced by the water vascular system.

PRINCIPLE OF EVOLUTION.—TYPES.—Type, as defined by Professor Agassiz, Dr. Allen thinks is entirely metaphysical. Agassiz taught, it will be remembered, that each type was a divine thought, that each was due to an independent, separate, creative act. Professor Allen is inclined to believe that type is simply a term of convenience; that in reality there is no such thing as type; at any rate, not in the sense used by Agassiz and his followers. It is a convenient word, however, to use in speaking of certain more or less similar forms running through a series of animals. As he has frequent occasion to use the terms general and special type, it will be well to obtain a clear idea of the meaning of these words at the outset. A generalized type is a low form of life; there are few or no attempts at division of functional labor; the specialized type belongs to a higher form of life: specialization or division of function has been carried to a more or less degree of perfection. The first principle is seen, thus, to be the basis of determining whether any given animal is generalized or specialized. The special types are evolved from the general forms. As an illustration of this subject, fish may be mentioned as the most generalized vertebrate. This is told first by the skeleton. The degree of ossification differs throughout the vertebrated series, and is more complete the higher the scale is ascended. In every fish there is a considerable amount of cartilage, all through life. In the amphyoxus the spinal column never becomes bony, but remains cartilaginous all lifetime.

The wolfian bodies probably remain in mature fish; a feature of fetal life of most vertebrates. Again, fish are aquatic, and the lowest class of animals of any grand division lives in this medium. Therefore all aquatic animals are more generalized than terrestrial animals. From a careful study of the structure and life, history, we can quite easily determine, as a rule, the character of the type—whether high or low—of any class of animals. Specialization may be studied in a more restricted sense, as occuring within a given class. Fish, though the most generalized of all vertebrates, have some species that are specialized, addition or change of position of organs to suit particular habits of life. The flounder is flat, and has both eyes on the upper surface. The pike is a highly specialized fish. The coral fish has specialized teeth. The cod-fish is a more generalized form and the amphyoxus is not only the lowest vertebrate, but the most generalized fish. This animal is double-pointed, lives in the sand, and was once thought to be a worm. No bone is found in it. The whole body is of the simplest character. No convolutions exist in the intestines, and there is no sacking for a stomach. All the functions of alimentation are done by this one tissue. The quadrupedal form of mamal is the generalized form. Man, when considered as a whole, is the most specialized mammal, but some particular parts or tissues are more general than the same structures in other mammals. The only mammal that flies is the bat, which is highly specialized for this function.

The teeth of the rodent are highly specialized, especially the incisors; they have no canine, therefore cannot tear. A specialized animal can do only a few things, but can do these few well. The human hand is generally spoken of as the most specialized structure of all animal creation, and the consideration of the hand, its mechanisms and vital endowments, as evincing design, formed one of the series of the Bridgewater treatises. The hand, however, is specialized in its myology, not in its form. The embryonic, therefore the generalized, number of digits, is five. This primal form is retained by man and the elephant; but the hog has only four, two of which are rudimental; the rhinoceros, three; the boa, two; and the horse but one, with concealed rudiments of second and fourth metarsal bones. These animals, consequently, have a more specialized form of a hand, and a foot. In the opossum (itself five-fingered and toed) the muscles of the paw are generalized, being but one flexor muscle, with a rudiment of a superficial. In man the flexor divides into a superficial and deep, a division of functional labor occurs, the muscular system of the hand becomes specialized. Finally, the clavicle is not present in all animals, and its presence indicates a power to bring the tips of the extremities together, and is also indicative of a specialization. This bone is absent in ruminants, imperfect in carnivora, and some rodentia, but perfect in squirrels, etc.

Individuality bears a close relationship to the degree of development. If formulated, the law might be expressed, the higher the animal the more marked the individuality. In the same species, one fish cannot be told from another. The same remark is true of corals, and compound animals, such as tapeworm. This latter animal has no mouth, no tail; it is a colony of animals; each segment is an organism, and one mature segment cannot, physiologically, be distinguished from another. The individuality of higher animals is well known; it is seen among sheep, cattle, horses, but in greatest perfection among men. Again, wherever lack of individuality is seen, the risk of death is greatest, and consequently the number of ova and young produced are incomparably in excess of those possessing individuality. Glancing at the downward scale, we are powerful, resist death to a marked degree, but are comparatively few in number. Monkeys are fewer in number than other quadrupeds. Birds are few compared with fish, and so on down the scale. This is a wise law of nature, for those who resist death are not in so much danger of extinction, while those who die easily, or who are the prey of other animals, or whose eggs are destroyed in immense numbers, must produce innumerable eggs and young, in order to protect the species from utter extinction."

BIBLIOGRAPHICAL.

Taft s Operative Dentistry.—Third Edition. Publishers: Lindsay & Blackiston, Philadelphia, Pa.

With pleasure we welcome a new edition of this valuable work, which, as the Author remarks in the preface, has involved little less labor than the writing of an entirely new book, so great have been the changes in almost every branch of practice during the past eight years. In the consideration of "Deposits," the origin of Tartar is treated of at greater length than in the former editions, and changes in the phraseology made in other sentences besides brief additions. The old illustration of scalers has been changed for another cut representing instruments better adapted for the purpose. The section on "Irregularity" remains the same, as also those relating to Atrophy, Exostosis, Abrasion, Denuding and Necrosis, Caries of the Teeth. The numbers of gold foil in most common use have been changed, 3, 5, 8, and 15 being omitted, and 60, and 240, added to the list; and among the materials used for filling teeth, oxy-chloride of zinc receives a separate notice. To the article on "Instruments for Filling," a number of new cuts of modern instruments are added, among them, those of the dental engine and its appliances, while the old drill stocks are omitted. In the article on "Separation of the Teeth," corundum disks, carriers and shields receive due attention, as well as "Jarvi's separators." Considerable matter is added to the chapter on "Filling Teeth," the cuts of "magnifiers" and "reflectors" being new, while the notice and illustration of "Forbes Gouges" are omitted as obselete. "Exclusion of Moistnre" takes the place of the more homely expression "drying cavities," this section being rewritten, and due attention is given to saliva extractors and rubber dam punches, clamps, clamp-forceps, etc., and the application of the rubber dam. The term "cohesive" is substituted for "adhesive" when speaking of gold foil. Some addition is made to the section on the "Mallet;" also to that describing the finishing of fillings, relating chiefly to the use of Hindustan and Scotch stones, corundum cones, disks, etc.

Some omissions and additions are also found in the section relating to "filling by classes and modifications," and several old illustrations of cheek distenders and tongue depressors are left out.

Considerable additions are also found in the section on "filling by classes and modifications," and the matrices of Dr. Jack, are illustrated and their application described: also Osmond's screws for anchoring fillings, with illustrations. At end of this chapter, a second and improved method of inserting pieces of enamel in the labial surfaces of superior incisors, etc., is described, and reference made to the combination of gold and platinum for filling prominent cavities. In the chapter on "Sensitive Dentine," reference is made to the use of 'carvacrol' "dental pain obtunder," and the word "terchloride" properly rendered. Considerable is added to the chapter on "Exposed Pulps," and the latest methods of treating the different pathological conditions of the dental pulp, are described in full; with an illustration of Palmer's "nerve canal instruments". The section on "Alveolar Abscess" has also been rewritten and contains a great deal of valuable information. The chapter on "Pivot Teeth" remains the same. Wattling s forceps for the removal of left inferior molars, is the addition to the chapter on "extraction of teeth."

To the chapter on "Anæsthetics" is added a cut of a large gas holder for liquid nitrous oxide gas, and a description given of Von Bonhorst's dental pain obtunder and its "applicator" illustrated

To this edition an appendix is added relating to "Dental Caries," "Palmer's Plugging Instruments," "Mallets," with illustrations of Bonwill's Electro-magnetic Mallet, Buckingham's Automatic Plugger for engines, and Jack's Matrices, with directions for their use; and entering upon dental therapeutics, the last section of the appendix is devoted to the reprint of an article on Salicylic Acid, taken from the *Chemist and Druggist.* This additional matter and the new illustrations, greatly enhance the value of this third edition over the preceding ones, and will cause it to be gladly welcomed by the profession.

The style in which the work is gotten up by the Publishers, renders it very attractive, and the large clear type and good paper will be appreciated by the student.

OBITUARY.

Dr. Wm. D. Jenks, a venerable and well-known citizen of Frederck City, Md., was found dead in his bed at his residence on the morning of May 1st. He practiced dentistry in Frederick for thirty years, and was very popular on account of his skill, courteous manners, &c. He was postmaster of that city during the first term of Mr. Lincoln's administration. Being greatly interested in discoveries of science, his late years have been devoted almost wholly to his library in reading journals and studying reports. He was a native of Massachusetts, was aged 85 years, a man of great benevolence, high morality and unswerving integrity, He was a member of the Masonic fraternity over sixty years.

MONTHLY SUMMARY.

Dislocation of the Malar Bone.—A case of dislocation of the malar bone is under observation at the present time, and is of interest from the very great rarity of its occurence. The dislocation was caused by direct injury, resulting from a fall, and is of a compound character. The wound exists external to the outer canthus of the eye, and it would seem that some projecting body, striking the patient in his descent, was the immediate cause of the injury. On passing the finger into the mouth it is noticed that the lower angle of the bone rests on the outer side of the molar teeth. By making pressure it can be apparently replaced, but so far no attempt at reduction has been considered advisable.—*New York Medical Journal.*

A Secret Pile Remedy.—Professor Edmund Andrews, of Chicago, says, in the *Journal and Examiner:*

A number of men have been itinerating in Illinois and the adjacent States, treating hemorrhoids by a new method. The secret has been sold to various physicians and other persons, at prices varying from fifty to twelve hundred dollars, and some of the purchasers have left a good practice in the expectation of making a fortune by traveling about and applying the remedy.

Investigation has placed the plan more fully in my possession, and I give it here for the benefit of all concerned.

The first thing is to have a good hypodermic syringe, kept in perfect order, with sharp, delicate pipes. The fluid used is strong carbolic acid dissolved in any bland fixed oil. The proportions are usually as follows:

℞—Crystalized carbolic acid........................ ℥iij.
Pure oil...... .... f. ℥j.—M

Some of the itinerants use equal parts of the two ingredients, and some of them substitute glycerine instead of oil, and at least one of them has tried a preparation of ergot.

When the piles are internal and not readily brought down, a Sims speculum is employed to uncover them. The operator generally takes only one pile at a time, always selecting the uppermost first, and injects into its interior from four to six drops of the carbolized oil, or rather the oleized carbolic acid. The injection turns the pile white, probably coagulates the blood in its vessels, and results in its shrinking away without the inflammation being severe enough at any one time as a general thing, to prevent the patient from attending to his business. The well-known power of carbolic acid to act as a local anæsthetic, antiplogistic, and antisuppurative, favors the progress.

When the irritation of the first injection has measurably subsided, another pile is attacked in the same way, and as the patient cannot see the syringe, he supposes that he has not been subjected to any " operation," which is a great satisfaction to him

The itinerants often call their plan "painless," but it proves in some persons atrociously distressing. The result is in many other cases, excellent, so that the plan may turn out to be worthy of a permanent place in the treatment of hemorrhoids. —*Medical and Surgical Reporter.*

Local Action of Astringents upon the Vessels.—The mesenteries of curarized frogs were the field of experiment. The transparent membranes were extended over the ring in the cork table, and the selected vessels accurately measured by means of the ocular micrometer ; then a uniformly large drop measured by the pipette, of the 0.1-50.0 per cent. solution of the astringent was applied to the vessel. The metronome was immediately started, and thus the time between the application and any change in the vessels was accurately determined. The following substances were employed :

1. Nitrate of Silver.—This agent retained its ancient reputation, for contraction of the vessels, the veins as well as the arteries without any previous dilatation, to the half of their original diameter took place in from sixteen to eighty seconds after the application, the time varying according to the strength of the solution.

2. Tannic, Gallic and Pyrogallic acids, instead of producing any constriction of the vessels with retardation of the blood current within them, caused dilation of the arteries, capillaries and veins to double their original size. The same effects were

produced after the removal of the cord, destruction of the medulla, and even of the brain, so that they were not of reflex origin.

3. Acetate of Lead acted in the same way upon the vessels, with the exception of the capillaries, as the Nitrate of Silver, though in a less powerful degree. The formation of white coagula in the center of the vessels was also frequent, and the author concludes that these are due to increased adhesiveness of the white corpuscles, thus causing a greater tendency than normal to coagulation.

4. The Sequi-chlorine of Iron, unless in 50.0 per cent. solution, produced no effect upon the vessels, and even in that strength was much less powerful than the Silver and Lead salts.

5. Alum.—The experiments with this substance were negative in results, as it produced sometimes contraction, sometimes dilatation, and at other moments no change whatever could be observed.—*Pharmak Uhtersuch.*—*N. Y. Medical Journal.*

A Young Mother.—An esteemed and entirely trustworthy correspondent has furnished us with the following facts touching a case which came under his observation. As an instance of early maternity, the case is one which certainly vies with any case on record.

The girl first menstruated when ten years and six months of age. She became pregnant at eleven years and six months, and was safely delivered of a male child January 19th, 1875. The reputed father of the child was, at the time, a hopeful of fourteen years of age. The child is still alive, but not very strong or bright, although the promising parents are doing as well as could be expected.—*Detroit Med. Journal.*

New Observations Concerning the Therapeutic Action of Carbolized Camphor.—Dr. Soulez publishes in *La France Medicale*, of January 23, 1877, a series of cases in which he successfully employed the carbolized camphor. This antiseptic, of which he speaks so highly, is obtained by dissolving nine grammes of the crystals of carbolic acid in one gramme of alcohol; to two grammes of this solution is then added twelve grammes of powdered camphor—the syrup-like liquid which results is the carbolized camphor. For dressings the carbolized camphor is reduced (one part to nineteen of olive oil or oil of sweet almonds) and in the mixture are saturated square pieces of lint, which are then applied, one over the other, to the wound; these are covered by a thin sheet of india-rubber, and on this, again, dry lint is bound with a bandager M. Soulez claims for this dressing three great advantages: suppression of pain after the operation, absence of febrile reaction, and, finally, rapid cicatrization.—*Clinic.*

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ARTICLE I.

Death from Nitrous Oxide Gas.

BY S. PARSONS SHAW, OF MANCHESTER, ENGLAND.

A melancholy case of death from the use of anæsthetic gas has occured in this city: and the verdict of the jury summoned by the coroner, declared that it had resulted from "syncope during the administration of nitrous oxide gas for the extraction of teeth, whilst laboring under fatty degeneration of the heart." Fearing that this statement may get into the American Journals and not unchallenged, I feel it a duty to make some explanations, as it must always be of the utmost importance that those of us who are daily administering this agent should have the fullest and most accurate information in a case attended with a fatal result.

The accounts which accompanied the report of the inquest in the Manchester papers, were substantially as follows:

Mr. George M. Harrison, aged fifty-three (53,) a well-known surgeon, formerly lecturer in one of our schools of medicine, went to a dentist to have some teeth extracted.

Mr. Harrison was much unnerved from excitement and loss of food and rest, and was very anxious to have sufficient gas to make him insensible. A quantity of gas was given, and an attempt made to extract the teeth, without success, he felt the pain. He then asked for more gas, held the mouth piece to his face for a time himself, inhaled vigorously, declined to comply with the request of the dentist, to hold up his hand as a sign that he had got enough, and directed that the inhalation be pushed until he snored. This was done, and two teeth were removed. As the patient did not recover, medical aid was summoned, when life was found to be extinct.

If nothing more was known of this unfortunate case, I apprehend that all who realize the almost insurmountable difficulties raised the moment the patient expresses the common wish that the administrator will "be sure to give him enough gas" would, upon the above facts alone, be strongly inclined to put an interrogation point after the verdict of coroner's jury.

It is natural that the profession should have a strong wish to know something more of this matter, and the lesson it teaches, as to the dangers attending the administration of the gas, than can be gathered from the verdict above quoted, and I am happy to be in a position to throw some light on the subject

The accomplished Manchester correspondent of the *Medical Times and Gazette*, in reviewing this case, concludes, from the facts above recited, that the jury were mistaken; and that death was not the result of heart disease, but probably of asphyxia. And since writing his communication, this gentleman has acquired from the records of the coroner's court, and by consultation with the gentlemen who made the post-mortem examination, the necessary facts to show that this was really the case. It should be here explained that this latter gentleman, although the one most competent to give evidence, was not called by the coroner as a witness, although in the court, but that the medical evidence was given second hand, by the surgeon who was first to see Mr. Harrison, and who consequently reported the case to the coroner.

From the facts gathered by the correspondent of the *Medical Times and Gazette*, and which he has generously allowed me to copy, *verbatim*, from his notes, I find that the post mortem appearances were as follows:

"The lungs on both sides were engorged with dark fluid blood; the right side of the heart was full of fluid blood, the left side was empty; there was a considerable quantity of fat beneath the skin, on the surface of the heart, in the omentum, and generally in the situation where fat is wholly deposited in corpulent persons. The muscular tissue of the heart was very slightly altered, in color and consistence, from incipient fatty degeneration. The liver was enlarged, pale and friable. The kidneys were full of blood, but otherwise healthy. The stomach contained a very small quantity of partially digested food, and a good deal of fœtid gas. The lining membrane of the trachea and bronchi was congested, some mucus was found in these tubes, but no blood or other foreign body. On removing the dura mater, a considerable quantity of cerebro-spinal fluid made its escape, the cornea of the lateral ventricles were dilated. The brain substance was healthy, and its vessels very full of dark fluid blood." Now, I would call especial attention to the fact that there was no more fat about the heart than we might expect in a patient in whom there was the tendency to obesity, revealed in its deposit in the places where it is in such cases wholly found; and also to what is the most important matter in this enquiry,—namely, that the muscular tissue of the heart was from fatty degeneration, but slightly altered in color and consistency. From this it appears so probable that the jury failed to comprehend the meaning of the evidence, and fell into an error not surprising, when directed by a non-medical coroner and confounded a *deposit of fat upon the heart*, *with fatty degeneration of the tissues of the heart itself*,—the latter being a serious pathological condition, while the former has but little pathological importance—that I think we may set aside that part of their verdict without further comment. Furthermore it may, I venture to assume, be just as safely decided that death occurred from apnœa—or, as more commonly but less accurately called asphyxia, for the general venous engorgement, the condition of the lungs and heart, the congested condition of the kidneys and the brain, and the serious effusion in the latter organ, all point to death from suffocation.

ARTICLE II.

DENTAL ASSOCIATIONS.

The South Carolina State Dental Association.

The State Board of Dental Examiners will meet in the city of Columbia, S. C., commencing at 9 o'clock, P. M., Tuesday, June 5th, 1877. A cordial invitation is extended to all in the profession to attend this meeting. "Come, and let us reason together."

President—Dr. J. W. Norwood. *Vice-President*—Dr. J. R. Thompson. *Corresponding Secretary*—Dr. H. D. Wilson. *Recording Secretary*—Dr. G. F. S. Wright. *Treasurer*—Dr. T. W. Bourcher.

Executive Committee—Drs. G. F. S. Wright, T. T. Moore. D. L. Boozer, D. R. McCallum, G. B. White.

Membership—Drs. W. S. Brown, H. D. Wilson, H. B. Rice, J. Q. McDavid, O. J. Bond.

Operative Dentistry—Drs. J. B. Patrick, J. R. Thompson, B. A. Muckenfuss, B. H. Teague, T. Berwick Legare.

Mechanical Dentistry—Drs. J. S. Thompson, C. C., Patrick, I. H. Alexander, S. M. Dinkins, W. S. Reynolds.

The following subjects are suggested for Essays and Discussions: 1. Dental Education. 2. Causes of Deterioration. 3. The Effects of Dead Teeth on the System. 4. Best Materials for Filling Roots of Teeth. 5. Separating Teeth. 6. Decidious Teeth—their relation to the permanent, and their treatment. 7. Irregularities of Permanent Teeth—their Cause and Treatment. 8. Relative Merits of Cohesive and non-Cohesive Gold as a Filling for Teeth. 9. Treatment of Exposed Nerves, Dead Teeth, and Alveola Abscess. 10. When to Extract. 11. The Best Base. 12. Selection of Artificial Teeth.

Pennsylvania State Dental Society.

The ninth annual meeting of this Society will convene at Minequa Springs, Tuesday, July 10th, at 10 o'clock A. M.

The essayists and subjects will be announced in the next number of this journal. It is designed to have surgical as well as operative clinics; dentists having cases suitable for surgical clinics, will confer a favor by corresponding with the Executive Committee at once.

Minequa is 40 miles North of Williamsport, on the Allegheny Range, a delightfully cool and pleasant summer resort.

The hotel rates to persons attending the Society will not exceed $2.00 per day; ample arrangements are being made for the comfort and accommodation of all who will attend. Rooms can be secured by addressing W. D. Tyler, Superintendent, Minequa, Pa., or the undersigned. Members of the dental profession from this and other states are invited to be present—Excursion tickets can be obtained from all principal points.

G. W. KLUMP, *Chairman Executive Committee,*
Williamsport Pa.

The American Dental Association.

The Annual Meeting of this Association will be held in Chicago, August 7th, 1877.

The following are the Standing Committees:

Physiology.—M. S. Dean, R. B. Winder, J. N. Farrar.

Pathology and Surgery.—I. Knapp, J. Taft, F. H. Rehwinkel.

Histology and Microscopy.—C. N. Pierce, E. D. Swain, H. A. Longnecker.

Chemistry.—S. B. Palmer, J. S. Cassidy, C. J. Essig.

Therapeutics.—C. A. Brackett, C. R. Butler, F. M. Odell.

Operative Dentistry.—G. H. Cushing, A. W. Harlan, F. J. S. Gorgas.

Mechanical Dentistry.—W. N. Morrison, F. A. Hunter, M. W. Foster.

Etiology.—D. C. Hawxhurst, M. H. Webb, H. L. Sage.

Literature.—W. A. Bronson, A. L. Northrop, E. A. Bogue.

Education.—L. Jack, J. N. Crouse, Thos. Fillebrown.

Prize Essays.—W. H. Morgan, B. Lord, L. D. Shepard.

C. STODDARD SMITH, Secretary.

The Tennessee Dental Association.

The Annual Meeting of this Association will be held at Lookout Mountain, commencing Wednesday, June 27th, at 10 o'clock, A. M.

Reduced rates by rail and reduced hotel charges have been secured, and all are invited to attend.

L. G. NOEL, Secretary.

The Southern Dental Association.

In accordance with a resolution passed at the last Annual Meeting of "The Southern Dental Association," held at Montgomery, Ala., requesting the Presiding Officer to call a special session, I hereby notify all members of the above mentioned Society, that there will be a Special Session held at Deer Park, Md., commencing Tuesday, Aug. 14th, 1877.

S. J. COBB, President,
E. S. CHISHOLM, Rec. Secretary.

ARTICLE III.

The Discovery of Anæsthesia.

BY J. MARION SIMS, M. D., NEW YORK.

Long before the days of Horace Wells and of Morton and Jackson, we were on the eve of the discovery of anæsthesia. In 1790, Priestley discovered nitrous oxide gas. In 1799, Sir Humphrey Davy experimented with it, and in 1800, he published his *Researches, Chemical and Philosophical, chiefly concerning Nitrous Oxide Gas and its Respiration*, in which he says, " As nitrous oxide, in its extensive operations, appears capable of destroying physical pain, *it may probably be used with advantage during surgical operations*, in which no great effusion of blood takes place." Sir Humphrey Davy had inhaled the gas repeatedly for headache and other painful affections, and finding relief for the time, he suggested its use as an anæsthetic in surgery; and if he had been a surgeon, there is no doubt he would have used it as much. But his great idea was lost to the world for more then forty years.

There are four claimants for the honor of the discovery of anæsthesia, viz: Crawford W. Long, of Athens, Georgia; Horace Wells, of Hartford, Ct.; W. T. G. Morton and Charles T. Jackson, of Boston.

I propose to give a plain statement of facts bearing on the question, leaving the reader to draw his own conclusions.

The claims of Long have never been fairly stated in connection with those who came after him. I am ashamed to say I was wholly ignorant of them until a very recent day, and I believe that the great mass of the profession are in the same category with me. I became acquainted with the facts of Long's labors by mere accident.

In October, 1876, Dr. P. A. Wilhite, of Anderson, S. C., came to New York to consult me about the health of his daughter. Her case required a surgical operation, and it was necessary for her to take ether, which was given by Dr.

Harry Sims. After the operation was over, and while we were waiting to see our patient fully restored from the effects of the anæsthetic, the conversation naturally turned upon the wonders of anæsthesia, when Dr. Wilhite said, "Doctor, I assisted at the first operation ever performed under influence of ether." I said, "but how could this be when you have never been in Boston, and the first operation ever performed under ether was by Warren, of Boston, in October, 1846, or as some claim, by Marcy, of Hartford, in January, 1845." Dr. Wilhite then told me that he had assisted Dr. Crawford W. Long, of Georgia, in extirpating a tumor from the neck of Mr. Venable, in March, 1842, while he was completely anæsthetized by the inhalation of sulphuric ether—that Mr. Venable was as profoundly anæsthetized as the patient then lying before us—and he also said that he had assisted Dr. Long to operate on other patients under the influence of ether in 1843 and '44, while he was a student of medicine in Dr. Long's office. He declared that Long was the real and original discoverer of anæsthesia, and he believed he would be so acknowledged if all the facts in the case were fully set forth.

He further said that he presumed that he (Dr. Wilhite) was the first person who had ever profoundly etherized any one—and it was under these circumstances. Dr. Wilhite says that from the time he was ten years old (1832,) he was familiar with the use of ether by inhalation as an excitant; that the boys and girls in his neighborhood near Athens, Georgia, were in the constant habit of using it; that there was hardly ever a gathering of young peaple that did not wind up with an ether frolic. Old-fashioned "quiltings" were very common in his day and time, and in the evening the boys and young men would go to these for the purpose of a dance or an ether frolic.

On one occasion, he met several young people at Mr. Ware's, about five miles west of Athens, at a quilting. The girls and boys all finished the evening by inhaling ether. Some would laugh, some cry, some fight, and some dance, just as when nitrous oxide gas is inhaled. It was in the fall of 1839. Wilhite was a romping boy of seventeen. All the boys and all the girls had inhaled the ether, some some of them more than once. They were looking around for new subjects for it, when Wilhite saw a negro boy at the door, who seemed to be enjoying the sport. Wilhite invited him to come in and try the ether. He refused. Other young men then insisted on his taking it. He refused again in a most positive manner; whereupon some of the thoughtless young men caught hold of the boy, and called Wilhite to give him the ether. He struggled violently, but they threw him down and held him there while Wilhite poured out some ether on a handkerchief, and pressed it firmly over his mouth and nose. He fought furiously. They persisted, thinking it was great fun. After a long struggle, the boy became quiet and unresisting, The young men then let him alone. They were greatly surprised that he did not get up immediately and say or do some foolish thing for them to laugh at. He lay quietly, and with stertorous breathing. They tried to arouse him, but could not. They then became greatly alarmed, and sent one of their number on horseback for Dr. Sydney Reese, at Athens, five miles distant. The messenger rode with all possible speed. He fortunately found Dr. Reese at home, who lost no time in going to Ware's. On his arrival, he found the negro lying on his back still soundly asleep. The young ladies had left the frightful scene. Young Wilhite, and his principal accomplice, thinking that they had in mere play murdered a fellow being, were so much alarmed, that they contemplated making their escape from the country; but the timely arrival of Dr. Reese soon restored their courage. Dr. Reese heard the history of the transaction. He then threw water in the face of the sleeping negro, slapped him, raised him up, shook him violently, and after a little he was roused to consciousness, greatly to the relief of all present. The Doctor then gave the youngsters a lecture on the dangers of such frolics, and cautioned them against a repetition of their heedless act. This of course broke up the ether frolics in this neighborhood. Dr. Wilhite thinks it was more than an hour from the time the messenger started for Dr. Reese, till he returned with him to Mr. Ware's. The distance to Athens and back was ten miles, and all this time the negro boy was profoundly narcotized.

This is unquestionably the first case in which sulphuric ether was even given to the extent of producing complete anæsthesia.

Dr. Crawford W. Long, now of Athens, Georgia, was born in Danielsville, Madison County, Georgia, on the 1st November, 1815. He graduated at the University of Georgia (then the Franklin College) in 1835. He studied medicine and graduated at the Medical Department of the University of Pennsylvania in 1839. He then went to Jefferson, Jackson County, Georgia, where he practiced medicine for many years. In 1842, he had four students in his office, viz: P. A. Wilhite, John S. Groves, D. I. Long and H. R. P. Long. The two last were relatives of Dr. Long, and they are both dead. Wilhite and Groves are still living (1877). Dr. Long was 27 years old. His pupils were all from 19 to 21; they were on the best of terms with each other, the Doctor entering into all the sports of his pupils with a hearty good will, while he never neglected his duties as their teacher. On one occasion, they were talking about inhalation of nitrous oxide gas, when one of his pupils asked him to make some for them. He said he did not have suitable apparatus for it, but that the inhalation of sulphuric ether would produce precisely the same exhilarating effect. One of the young men present said he had inhaled ether while at school, and was willing to do it again. They were all anxious to witness its effects. Dr. Long got some ether immediately and gave it to the young man who had previously inhaled it. He then inhaled it himself, and afterwards gave it to all present. After this the young Doctor and his pupils indulged occasionally in ether frolics. On several occasions, Dr. Long became furiously excited and could not be controlled. On recovering from the ether intoxication, he frequently noticed that his arms and hands were badly bruised, and yet he was not conscious of having felt any pain at the time he was under the influence of the ether. He also noticed the same thing in his pupils. They were often badly hurt by falls and blows, and were not conscious of pain at the time. These facts, repeatedly observed, suggested to his mind the idea of using ether to prevent the pain of surgical operations. He frequently spoke of this to his students, and at last he determined to give it a trial. Wilhite ecouraged him by relating the case of the negro boy he had playfully and unintentionally put under the influence of ether for an hour or more in the Fall of 1839.

Dr. Long having made up his mind to try the experiment with ether on the first favorable opportunity, says (*Southern Medical and Surgical Journal*, Dec., 1849 :)

"The first patient to whom I administered ether in a surgical operation, was Mr. James M. Venable, who then resided within two miles of Jefferson. Mr. Venable consulted me on several occasions with regard to the propriety of removing two small tumors situated on the back part of his neck, but would postpone from time to time having the operations performed, from dread of pain. At length I mentioned to him the fact of my receiving bruises while under the influence of the vapor of ether, without suffering, and, as I knew him to be fond of, and accustomed to inhale ether, I suggested to him the probability that the operations might be performed without pain, and proposed operating on him while under its influence. He consented to have one tumor removed, and the operation was performed the same day. The ether was given to Mr. Venable on a towel; and when fully under its influence I extirpated the tumor. It was encysted, and about half an inch in diameter. The patient continued to inhale ether during the time of the operation, and when informed it was over, seemed incredulous, till the tumor was shown him. He gave no evidence of suffering during the operation, and assured me, after it was over, that he did not experience the slightest degree of pain from its performance." *This operation was performed on the 30th of March*, 1842.

"The second operation I performed upon a patient etherized was on the 6th June, 1842, and was on the same person (Mr. Venable) for the removal of another small tumor. This operation required more time than the first, from the cyst of the tumor having formed adhesions to the surrounding parts. The patient was insensible to pain during the operation, until the last attachment of the cyst was separated, when he exhibited signs of slight suffering, but asserted after the operation was over that the sensation of pain was so slight as scarcely to be perceived. In this operation, the inhalation of ether ceased before the first incision was made."

In a certificate sworn to by James M. Venable on the 23d July, 1849, he says: "In the early part of the year (1842,) the young men of Jefferson and the country adjoining were in the habit of inhaling ether for its exhilarating powers, and I inhaled it myself frequently for that purpose and was very fond of its use. While attending the Academy, I was frequently in the office of Dr. C. W. Long, and having two tumors on the side and rather back of my neck, I several times spoke to him about the propriety of cutting them out, but postponed the operation from time to time. On one occasion, we had some conversation about the probability that the tumors might be cut out while I was under the influence of sulphuric ether, without my experiencing pain, and he proposed operating on me while under its influence. I agreed to have one tumor cut out, and had the operation performed that evening (afternoon) after school was dismissed. This was in the early part of the spring of 1842. I commenced inhaling the ether before the operation was commenced, and continued it until the operation was over. I did not feel the slightest pain from the operation, and could not believe the tumor was removed until it was shown to me. A month or two after this time, Dr. C. W. Long, cut out the other tumor situated on the same side of my neck. In this operation, I did not feel the least pain until the last cut was made, when I felt a little pain. In this operation, I stopped inhaling the ether before the operation was finished. I inhaled the ether in both instances from a towel, which was the common method of taking it."

Dr. Long's four students Wilhite, Groves, and the two Long's, also E. S. Rawls (now Dr. Rawls) and Andrew J. Thurmond, were present and assisted at the operation. Dr. Wilhite tells me that the etherization of Venable was as complete as it is ever made now-a-days, and that Venable always declared he felt no pain during the operation.

On the 3d July, 1842, Dr. Long amputated the toe of a negro boy, Jack, belonging to Mrs. Hemphill. Jack felt no pain, having been completely anæsthetized.

On the 9th September, 1843, Dr. Long exsected, without pain, three small cystic tumors from the head of Mrs. Mary Vincent, who was etherized for the purpose.

On the 8th January, 1845, Dr. Long amputated two fingers for a negro boy belonging to Mr. Ralph Bailey, Sr., the patient being fully etherized and feeling no pain whatever.

Morton's friends have been from the outset clamorous and persistent in proclaiming to the world "that Morton was the first man who ever produced complete anæsthesia for surgical operations." The facts above stated prove incontestably that they were mistaken; and before we get through it will be shown that they were doubly mistaken; for it will be established beyond controversy that Wells produced anæsthesia by nitrous oxide gas long before Morton did it with ether.

Long's anæsthesia with sulphuric ether was on the 30th March, 1842.

Well's anæsthesia with nitrous oxide gas was on the 11th December, 1844.

Morton's anæsthesia with sulphuric ether was on the 30th September, 1846.

Thus we see that Long ante-dates Wells two years and eight months, and ante-dates Morton four years and six months.

Dr. Long's operation under the influence of ether were known by all his neighbors—professional and non-professional. Many of these are still living. Dr. Wilhite lives at Anderson, South Carolina. Dr. John S. Groves, his fellow-student with Long in 1842, is now living at Dalton, Georgia. Dr. A. Delaperiere was the only physician, besides Dr. Long, at Jefferson in 1842, He witnessed these operations; has given his testimony to that effect, and is still living. Dr. E. S. Rawls, another witness, was living in Alabama a short time ago. All these men testify to the act that Long's operations under ether were witnessed and known by all medical men in his neighborhood and by the whole community.

Long's operations were not secret. He made no mystery about the substance given to prevent pain. He took out no patent for his discovery as did Morton and Jackson. He did not attempt to convert it into a money speculation. He published it before all men. It was not hidden from the world.

True, his was a very contracted world. He was waiting to test his great discovery in some capital operation. He lived in an obscure town where there were no railroads and no ponderous machinery to maim his fellow-men and the amputation of a leg or arm was an era in the life of a country doctor.

While he was still waiting for larger operations before communicating his discovery to some scientific journal, the labors of Wells and Morton and Jackson and Simpson burst upon the world. When Jackson made his visit to Long at Athens, in March, 1854, he said to Long: "You have the advantage of priority in date and in the first use of ether as an anæsthetic; but we have the advantage of priority of publication."

Now upon this point Long, Wells, Morton and Jackson stand individually upon the same level. Long exhibited to medical men and to the community his operations under ether (1842.) Wells exhibited to medical men and to the community his operation of the extraction of teeth under the influence of nitrous oxide gas (1844.) Morton exhibited to medical men and to the community the use of secret remedy, "Letheon," 1846 as anæsthetic. But Morton was fortunate in showing his patent remedy to the great surgeons of Boston. And it was not Morton, but it was Warren and Hayward and Bigelow who performed the operations at the Massachusetts General Hospital (October, 1846) on patients to whom Morton gave his "Letheon" that the world owes the immediate and universal use of anæsthesia in surgery. If Morton could have had his way he would have deodorized the ether and kept it a secret from the world.

Neither Wells nor Morton nor Jackson ever published a word on the subject till it burst forth in a blaze from the labors of the hospital surgeons already named.

When Warren and Hayward and Bigelow proved the real greatness of the discovery, then it was that Wells, Morton and Jackson began the war of pamphlets, and not till then did either of them publish in any scientific Journal a line about anæsthesia. And thus we see that its first publication to the world was really due to the illustrious surgeons of the Massachusetts General Hospital.

In 1853 Morton petitioned Congress to grant him a large sum of money for the discovery of anæsthesia. The friends of Wells opposed it, and claimed this honor for Wells, who used nitrous oxide gas as an anæsthetic two years and a half before Morton used ether for this purpose.

Then it was that the friends of Long appeared upon the scene, proving that Long was the first to used ether, antedating Morton four years and a half.

When Long's claim to the honor of discovering anæsthesia was presented to Congress by the Hon. Mr. Dawson, Senator from Georgia, it was formidable enough to block movements of Morton to get the appropriation he demanded for his discovery. They were so strong that Dr. Charles T. Jackson went to Athens, Georgia, expressly to see Dr. Long on the subject. In a communication to the Boston *Medical and Surgical Journal* April 11th, 1861, Dr. Charles T. Jackson says he visited Dr. Long at Athens, Georgia, on March 8th, 1854, to examine into Dr. Long's claims to being the first to use sulphuric ether as an anæsthetic in surgery, and he further says: "From the documents shown me by Dr. Long, it appears that he employed sulphuric ether as an anæsthetic agent—

First. On March 30th, 1842, when he extirpated a small glandular tumor from the neck of James M. Venable, a boy [Mr. Venable was over 21 years old when the operation was performed.—J. M. S.] in Jefferson, Georgia, now dead.

Second. On July 3d, 1842, in the amputation of the toe of a negro boy belonging to Mrs. Hemphill, of Jackson, Georgia.

Third. On September 9th, 1843, in the extirpation of a tumor from the head of Mary Vincent, of Jackson, Georgia.

Fourth. On January 8th, 1845, in the amputation of a finger of a negro boy belonging to Ralph Baily, of Jackson, Georgia.

Copies of the letters and depositions proving these operations with ether were all shown me by Dr. Long.

He also referred me to physicians in Jefferson who knew of the operations at the time.

The above extract from Dr. Jackson's paper from Boston *Medical Journal* recognizes Long's claim to being the first to produce anæsthesia for surgical operations, but it does not tell the whole story of Dr. Jackson's visit to Dr. Long.

Dr. Long has furnished me with all the evidence, consisting of affidavits, certificates, book entries, &c., that Dr. Jackson examined. He has also written me fully on the subject, and every fact that I have stated can be substantiated by documentary evidence.

In one of Dr. Long's letters to me (Nov. 5, 1876,) he says:

"In 1854 Dr Charles T. Jackson came to Georgia and spent two days with me in Athens, most of the time in my office, examining books, accounts, dates and certificates establishing the time, &c., of my operations. He expressed himself satisfied with the correctness of my claim to the first use of ether as an anæsthetic in surgical operations. Dr. Jackson informed me that he would go from Athens, to Dahlonega, Georgia, and as I knew he must pass through Jefferson where I resided up to 1850, and where my first operations under ether were performed, I requested him to stop in Jefferson and see some of the physicians there who witnessed or knew of the operations, and also a number of the citizens of the village who either witnessed the operations or were familiar with them from common report. Dr. Jackson spent one or more days in Jefierson, and on his return, expressed himself satisfied with the testimony."

"In Dr. Jackson's communication to the Boston *Medical and Surgical Journal* (April 11th, 1861,) he neglected to say anything of the information he obtained while in Jefferson, although he admitted to me on his return, that the evidence was perfectly satisfactory."

The Hon. C. W. Andrews, of Madison, Georgia, informs me that he was in Dr. Long's employ and in his office when Dr. Jackson spent a whole day with Long in comparing notes and talking over the subject of etherization, and it seems that the real object of Dr. Jackson's visit to Dr. Long was to induce Long to unite with him in laying their conjoint claims before Congress as the real discoverers of anæsthesia as opposed to those of Morton. Jackson was willing to concede to Long the honor of being the first to use ether in surgical operations, but wished Long to concede to him the honor of priority in making the discovery of the principle of anæsthesia when he inhaled ether to relieve the pain and difficulty of breathing after inhaling chlorine gas (as Sir Humphrey Davy had done before.)

Dr. Long says (February 8th, 1877): "In our conversation I understood Dr. Jackson to yield the point of priority to me—and so did the Hon. C. W. Andrews. I did not admit to him that he was the first to make the discovery—leaving to me its practical application; and when he proposed to me to unite our claims—he to claim the discovery and I its first practical use in surgical operations—I positively refused. I was satisfied that I was entitled to the credit of the discovery, as well as of the first practical use of ether in surgical operations."

"Instead of writing to Senator Dawson to unite our claims as Dr. Jackson requested, I wrote to Mr. Dawson to make no such compromise, but to place my claims solely on their merits; and if you will consult the Congressional proceedings of that time you will see that Mr. Dawson presented my claims separate and independent."

Now let us see how the followers of Long worked out the problem of anæsthesia without any knowledge whatever of his labors.

Horace Wells, a native of Hartford, Windsor County, Vermont, studied dentistry in Boston, and at the age of 21 (1836) he opened an office in Hartford, Connecticut, to practice his profession. His mind was early turned to the subject of preventing pain in the extraction of teeth. In August, 1840, Dr. L. P. Brockett, of Brooklyn, N. Y., then a medical student, went to Wells to have a molar tooth extracted; the operation was difficult, and so painful that Wells said that there ought to be some method of mitigating such suffering, and that he thought a man might be made so drunk by the inhalation of nitrous oxide gas as to prevent the pain of dental and other operations. This shows how deeply impressed this subject was upon the mind of Wells at that early day. On December 10, 1844, Mr. G. Q. Colton delivered a lecture in Hartford, Conn., on "Laughing gas," and after the lecture he administered the gas to Wells and several other gentlemen. One of them (Mr. Cooley,) while under its influence, fell over some benches, and was evidently badly injured; when he returned to consciousness, Wells rushed up to him and inquired if he was hurt. He replied, "No." Wells then said, "You must have been hurt, for you struck your legs against the benches" The young man then, at Well's suggestion, pulled up his pantaloons; the blood was running down his legs and his knees were badly injured. When again questioned by Wells, he said, "I did not feel any pain at the time." Wells then turned to a friend (Mr. David Clarke,) who was near by, and an eye witness to all of this, and remarked, "I believe a man by taking that gas could have a tooth extracted or a limb amputated and not feel the pain." So thoroughly was Wells convinced of this fact that he told his wife on their way home that he intended to take the gas the next day and have a tooth extracted. On arriving home, he left his wife and went to see his friend Dr. Riggs, to announce his great discovery, and his intention to take the gas for the extraction of a tooth. Riggs tried to dissuade him from it, but his mind was made up and he said, "As the young man did not feel pain at the time he was hurt, why cannot the gas be used in the extraction of teeth?" Early next morning (December 11) Wells called on Colton and engaged him to go to his office at ten o'clock and give him the gas. He did so, and Dr. Riggs extracted a large molar tooth for Wells while under the influence of the gas. Wells did not seem to feel any pain. He remained unconscious for a few moments, and on coming to, he exclaimed, "A new era in tooth-pulling! It did not hurt me more than the prick of a pin. It is the greatest discovery ever made."

From that moment Wells' enthusiasm was unbounded. He immediately began the administration of the gas, and daily extracted teeth under its influence; and other dentists in Hartford adopted the same practice with like success. Dr. Marcy, then of Hartford, on witnessing Wells' operations, told him that when a student at Amherst College, he, with other students had, for amusement, often inhaled nitrous oxide gas and also the vapor of sulphuric ether, and that the effects of the two were identical; and he suggested to Wells to try ether as a substitute for the gas. On this hint Wells tried it. He inhaled it himself, and he says, "I found it very difficult to inhale the vapor of ether, in consequence of the choking sensation. For this reason, and for the reason that Dr. Marcy and myself came to the conclusion that nitrous oxide gas was not so liable to do injury, I resolved to adhere to this alone."

About a month after the discovery of anæsthesia by Wells, Dr. Marcy (January, 1845) gave the vapor of sulphuric ether to a sailor for the extirpation of a small wen on the side of his head. The patient was insensible and the operation successful, but Marcy, after this experiment, still advised Wells to stick to the gas as being more agreeable, and perhaps, safer than ether. Wells continued the use of the gas, and the dentists (Riggs, Terry, Braddock and Crowfoot) and the doctors in Hartford were all convinced of its value as an anæsthetic. But Wells felt that his great discovery should be laid more broadly before the profession and the world, and early in 1845 went to Boston for this purpose. Through his former pupil and partner, Dr. Morton, dentist, he was introduced to Dr. John C. Warren, Dr. Charles T. Jackson, Dr. Hayward, and others. Dr. Warren received him kindly, and Wells remained in Boston several days with the expectation of giving the gas to a man who was to submit to an amputation at the hands of Dr. Warren. For some cause the operation was postponed. Wells was then invited to address the class at the medical college on the subject. He did so at some length, and then administered the gas for the extraction of a tooth. Unfortunately, the gas-bag was removed too soon; the patient was not sufficiently anæsthetized; he screamed out, and said he felt the pain of extraction, and the experiment was therefore a failure. Wells was hooted at, and unfeelingly hissed out of the amphitheatre by the thoughtless young men present, and he was pronouced a charlatan and his anæsthetic a humbug. He returned home greatly mortified at his failure, was taken suddenly ill and did not recover his health for many weeks.

In 1341-42, Morton was a pupil of Wells. In 1843, Wells established Morton in Boston, and for a while was his partner. In 1845-46, after Well's discovery of anæsthesia, by the use of nitrous oxide gas, they had frequent interviews, sometimes in Boston and sometimes in Hartford. After Wells unfortunate visit to Boston, Morton became greatly interested in the subject of anæsthesia. Notwithstanding Well's failures in Boston, Morton subsequently witnessed his continued success with the gas in Hartford, and was anxious to try it again in Boston. During one of his visits to Wells in Hartford in 1846, Morton asked Wells to show him how to make the gas. Wells not having time, referred him to Dr. Chas. T. Jackson to make it for him, as he was a chemist. On returning home, Morton called on Jackson for this purpose. Jackson told Morton that the manufacture of nitrous oxide gas required some nicety of manipulation; that there was danger of his getting nitric instead of nitrous oxide, and that he was too busy at that time to make it for him. Morton explained that he wished to use it to render patients insensible for the extraction of teeth. Jackson then told him to use the vapor of sulphuric ether, saying that it was perfectly safe, could be easily procured, and that the students at Cambridge often inhaled it for amusement.

[TO BE CONTINUED.]

ARTICLE IV.

A Personal Experience of Nitrous Oxide as an Anæsthetic.

BY H. GIBBONS, M. D.

The experience of disease and of the action of medicines on one's own person often brings to light facts which could not possibly be learned through observations made on others. I have often thought that the subjective phase of medical enquiry is too much neglected, and that we depend too exclusively in our investigations on objective enquiry. A good, round fit of sickness, with the consequent treatment, experienced by a medical student, will give him a quicker insight into the nature of the disease than he can gather from books or patients. Every medical student, both before and after commencing practice, but more particularly after, should make the best of all aberrations from health occurring in his own person. He should observe every thing with microscopic eye. He should subject every thing to mental analysis. He should record and remember everything.

A few months ago I had some teeth extracted whilst under the influence of nitrous oxide gas. Some new experiences derived from the process I propose to narrate, even at the risk of being charged with wasting time on a trivial subject. I was in Philadelphia, and suffered from my teeth for several weeks, but being unnerved by some months of invalidism, and having from early life endured much pain from my teeth and from the extraction of them, which was always difficult, I bore the pain in the hope of spontaneous relief. Disappointed in this I finally surrendered, and called on a brother residing in Philadelphia for reference to some good dentist. It was not my design to use an anæsthetic. My brother told me of a Dr. Thomas, who made a specialty of tooth-drawing under the influence of nitrous oxide gas, and who had extracted a larger number of teeth than any other living man—as was supposed. Dr. Thomas had lately extracted a tooth for my brother, who gave me a very intelligent and interesting account of his sensations on the occasion. The operator advised him to fix his thoughts on some subject whilst inhaling the gas. He chose mentally the subject of death, and passed into a sort of dream, imagining himself crossing a long bridge with other travelers, who were continually dropping through one by one. It was in fact a resurrection in his memory of the vision of Addison, one of his school boy readings. After he had been marching onward for a considerable time, expecting to fall through like his companions, he heard a sharp tinkling sound, and in the next moment felt a tap on the shoulder and heard the voice of the operator calling him by name. He then aroused instantly and completely, and was amazed to find his tooth lying by his side on the table. He was so enthusiastic in his account of the process and so charmed with the result, that a listener might almost feel tempted to have his teeth drawn in the same style for the mere luxury of it.

I repaired forthwith to the office of Dr. Thomas, in Walnut street, introduced myself, and took my seat in the official chair. There were three teeth, or rather the remains of three, causing the trouble, one canine and two adjoining in the lower jaw. The canine was the principal offender and I intended to have it alone extracted, and not to use an anæsthetic, but simply to avail myself of the skill of the operator. But before I realized my position the breathing tube was in my mouth and the gas was under respiration. I expected to feel its exhilarating effects, which I had many times experienced when inhaling it for amusement. But no such effect was produced; or if there were, no recollection of it remained. On the contrary the loss of consciousness was sudden and complete. There was no dreaming nor any sense of the lapse of time such as my brother had experienced. But a sharp tinkling sound, barely audible, was the only sensation of any kind. In the next moment, I felt a gentle tap on the hand and heard the voice of the operator, and returned in a flash as it were, to perfect consciousness. I did not realize the lapse of an iota of time from the inhalation of the gas till the restoration of consciousness, and of course was much surprised when Dr. Thomas pointed to the table at my side, saying "There are your three teeth, Doctor!"

A slight degree of languor which followed, made it comfortable to me to keep my seat for about ten minutes. After that time no abnormal sensations were experienced. Not a trace of suffering remained in the mouth or followed the operation, nor did there follow the shadow of disturbance of the head or stomach.

Both in my brother's case and my own the tinkling sound appears to have been caused by the act of laying down the forceps on the marble slab after the extraction of the teeth. The dreaming in the one case, indicated that the entire brain was not anæsthetized, and that the condition in this respect approached that of normal sleep. But in my case the complete annihilation of time from the sharp line of departing consciousness to the equally sharp line of its perfect restoration, was the most striking idea furnished by the entire proceeding.

There is probably nothing peculiar in all these details—nothing more than has been experienced by thousands of persons. Judging from the descriptions given me by others, I presume there is much sameness in the sensations resulting from the same causes. Patients inform me that they very generally awake from anæsthesia with the most confident impression that there has not been time to do any thing, and that their revival is premature; and that they are amazed and perplexed to find their teeth on the table. I believe the idea of complete annihilation of time is much more marked in anæsthesia from nitrous oxide gas than from chloroform and ether.

In comparing the physiological action of the several agents, Dr. Thomas thinks that the gas is safer than others because its action is confined to the cerebrum and to the sensory tract. Never paralyzing the cerebellum or medulla oblongata, it does not disturb the function of respiration nor the action of the heart. In the many thousands of patients on whom he has operated under its influence, he has never met with a single instance of dangerous results. It is the practice in Philadelphia for operating dentists to send their patients to a specialist for the extraction of teeth —most of them having abandoned this branch of the business, in order that their patients may avail themselves of the benefits of the gas. Where a few teeth only are to be taken out from time to time they find it expensive to keep always on hand fresh supplies of nitrous oxide. Dr. Thomas appears to be the general favorite, to whom most of the patients are sent. Confining himself entirely to this special department and performing no other dental operations, there is probably no individual in the world superior to him in the art of tooth drawing. In all the Atlantic cities nitrous oxide is preferred to all other anæsthetics in painful dental operations, requiring but a brief time for their performance. In fact, it ought to supercede all other anæsthetic agents. The danger from it is simply *nil.* It is true that a few mishaps have been reported as the result of its prolonged use in surgical operations. But I cannot learn that a single death has ever occurred from it in a dentist's chair; and the number of cases in which it has been employed in this way amounts to millions. Chloroform has a very different record, and though ether is nearly exempt from suspicion of fatal effects, yet the nausea which almost invariably follows its inhalation presents a strong argument against it, which is not in the least degree applicable to the gas. Besides, the inhalation of the gas is easily accompilished and is not disagreeable. Chloroform is unpleasant to patients generally, and ether much more so. The anæsthetic action of the gas is complete in one minute or less, whilst the other agents require an indefinite time for their operation.

In all brief surgical operations calling for anæsthesia, the same arguments apply in favor of nitrous oxide as in tooth drawing. But as the loss of sensation lasts only for one or two minutes, it is necessary to repeat the inhalation when the operations require more time. Patients have in this way frequently been kept under its influence for fifteen or twenty minutes. Such prolongation however of the anæsthetic state involves some risk and is not deemed advisable.

There is no question but that nitrous oxide would by this time have completely excluded other anæsthetics from dentistry, were it not for the difficulty before referred to, in keeping a supply of the article in a perfect condition. To this may be added as an objection the difficulty of transpor tation. For the purpose of transportation, tin vessels have been devised, in which the gas may be compressed. It has even been compressed, in some instances, into the liquid form.

Every one has observed, during surgical operations on anæsthetized subjects, the frequent struggles and contortions of the patient, indicate suffering. At least this condition exists when the agent, whether chloroform or ether, has not pushed to its extreme effect. In such cases it is difficult to avoid the impression that the patient really suffers pain; although on awaking he has no remembrance of it. The action of nitrous oxid is nearly exempt from these expressions of pain, and if they are really what they seem to be, this is an argument in its favor.

The leading points which I have endeavored to set forth in this paper are as follows:

Nitrous oxide gas is preferable to ether and chloroform as an anæsthetic, because,

1. It is much more easily administered, and is not unpleasant to the patient.

2. It is more speedy and certain in its action, exhibiting its effect in a definite time.

3. Its anæsthesia is as perfect as that from ether and chloroform, if not more so.

4. It has no disagreeable after effects.

5. It is absolutely safe, limiting its paralyzing power to the cerebrum and sensory tract, and not invading the cerebellum or medulla oblongata.

6. It is adapted to all brief surgical operations.

7. Its anæsthetic effect may be prolonged by renewal of inhalation, say for five or ten minutes, but should not be prolonged indefinitely. It is therefore not adapted for operations requiring a long time, such as ovariotomy.—*Pacific Med. and Surg. Journal.*

ARTICLE V.

Sub-Luxation of the Inferior Maxilla Backwards.

BY E. M. MOORE, JR., M. D.

Luxations of the jaw are described in the books by all the authors as occurring in two ways and in but one direction, viz: A complete luxation, where the condyle of the lower jaw has left the glenoid cavity and lies forward of the eminentia articularis and without the capsule. The other a sublaxation, which takes place in two ways, one where the capsular ligament, from some constitutional cause, has become elongated and will allow of a separation of the joint surface within the capsule, and the other from violence, where the end of the condyle, catching in front of the cartilage, crumpled it back, and is held forward of its normal position.

These are the conditions described in all the works on surgery. In vain have I searched the surgeries and journals to find anything different, and the accident, a report of which follows, is, as far as I can learn, unique.

Before reporting the case, I would like to give an outline of the anatomy of the joint, as it will assist me in the description of the accident, and the reasons for the diagnosis.

The glenoid fossa lies back of the middle root of the zygoma, which forms its anterior margin, and in front of the glasserian or glenoid fissure which limits its extent backwards. The cavity is oval in shape, the transverse being the long diameter. The anterior margin is rounded to allow of greater freedom of motion at the joint when the mouth is opened. The condyle of the lower jaw is also oval in shape, and the transverse diameter is also the longer.

It convex from side to side, and from before backwards, and in opening the mouth there is a peculiar condition present, that of convex surfaces opposing each other in the formation of a joint. In order to guard against the constant danger of dislocation of this joint, which would be present every time the mouth was widely opened, on account of this formation of the joint, there is interposed between the two joint surfaces an inter-articular-fibro cartilage, which conforms in general to the shape of the articulation, being convex posteriorly and slightly concave anteriorly and presenting a cup shaped surface above and below which presents a concave surface to the convexity of the condyle and the anterior rounded margin of the glenoid ussa. The capsular ligament is deficient on the anterior and internal aspect of the joint to admit of the attachment of the external pterogoid muscle to the inter-articular-fibro cartilage. The joint is supplied with two synovial membranes.

Last August Mrs. H. came to Dr. Moore's office for relief, being unable to close her mouth or to open it but a little way without experiencing great pain at the left temporo maxillary articulation. The accident was caused by the patient biting off the superabundant stem of a rose which she held in her right hand. This accident had occurred several times before, as the following letter will show: Upon examination it was found that the lower jaw was separated from the upper one-quarter of an inch in front, and was drawn back three-eighths of an inch, measurement being made from the edge of the front teeth of the upper jaw to the anterior surface of the teeth of lower jaw when the mouth was closed as nearly as possible. The jaw was carried slightly to the left side. There was an appreciable difference felt in the relation of the condyle with the mastoid processes of each side. The saliva ran freely on the affected side.

The reduction was made by the operator standing behind the patient, the back of her head resting against his chest, and pressing up the chin with both his hands, a wedge of ivory having been previously placed between the teeth on the injured side, as far back as possible. The pressure was continued for two or three minutes, in order to stretch the capsul and smooth out the wrinkles. The wedge was then quickly removed, the pressure on the chin being continued. Upon releasing the patient it was found that the jaw had assumed its normal position, and the mouth could be closed and moved in any direction with but little pain. On measurement it was found that the lower jaw had come forward one-quarter of an inch.

The diagnosis made was sub-luxation backwards, on the following grounds: The position of the jaw, the relation of both jaws to each other, the restoration by the usual method of reduction and the cause of the accident. In biting off a thread or the stem of a rose, the motion of the jaw is peculiar. In performing this act the canine, or first bicuspid, the teeth are generally employed, and the motion of the jaw is from before backward, and generally from right to left, and at the same time the muscles which close the jaw are firmly contracted. In this case the condyle was carried just beyond the edge of the cartilage, and the firm contraction of the muscles crumpled the cartilage before it, and produced the sub-luxation.

Additional confirmation is desired, from the fact that in previous displacements reduction was accomplished by the extreme projection of the condyle forward, by the act of yawning

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ROCHESTER, March 1st, 1877.

DR. E. M. MOORE, DEAR SIR:—

The difficulty with my wife's mouth has been about as follows: Quite a number of years ago, when she was a young lady, she first noticed a tenderness where the jaws are united, with a difficulty in opening her mouth and in getting her front teeth together. This would happen occasionally, from what cause she does not now remember, and it always passed away in a day or two. Later she remembers frequently having caused the trouble by biting something hard with the side front teeth, and the difficulty would frequently pass off in a night, or she would get relief in *gaping*. She thinks she never was troubled more than two or three days at a time before you saw her. At that time she displaced her jaw by biting the stem of a rose which she had in her right hand, and it had been out of position for just a week. It appeared to be more completely out of joint than ever before, and she thinks would not have resumed its natural position without assistance.

Since then she had no serious trouble with it, though at times there has been felt a slight tenderness after biting too hard on something with the front teeth.

Mrs. H. thinks that nearly always the jaw was displaced in biting off her thread in sewing. Once a painful tap under the chin producing a similar effect.

Yours Respectfully, C. M. H.

—*Buffalo Med. and Surg. Journal.*

ARTICLE VI.

Discoloration of Gold Plugs.

After having devoted much time and exercised the highest skill for the production of gold fillings that would, for years, stand as monuments of glory to the progressive spirit of dentistry, it is certainly mortifying, not to say discouraging, to have these same gold plugs present themselves in a few months with a dark and sometimes coppery discoloration, covering completely the exposed surface.

Prof. Chandler, of Boston, has been investigating the subject and has recently written an interesting article, in which he details experiments in the manipulation of gold foil previous to its introduction into the cavity. After subjecting gold to a great variety of tests he comes to the onclusion that the discoloration is due to the minute particles of steel that are constantly worn off from the points of the pluggers, and become incorporated in the mass of the gold plug; this steel, he thinks, then becomes oxidised and gives rise to the discoloration. This theory of Prof. Chandler would undoubtedly do very well if it could be shown that sufficient iron (steel) was worn from the serration of a plugger to produce the results complained of; but unfortunately this cannot be done. I have a set of thirteen pluggers which I have used constantly for several years; the total loss of weight sustained by these instruments during this period (they have never been re sharpened) is two grains. Now, during this time, this set of pluggers have condensed no less than twenty ounces of gold foil, or in other words two grains of iron (or steel) have become incorporated with twenty ounces of gold, which is one-tenth of a grain to the ounce, or about the one thousandth part of a grain of iron in an average gold filling; and when we come to consider that but a very small portion of this one-thousandth of a grain is really on the surface of the plug (the portion discolored) it is impossible for human credulity to go to the extent of claiming that this infinitessimal particle of iron could possibly produce such effects as we often see. I am aware that the smallest conceivable portion of many metals can be detected by the flame test; thus the one millionth part of a grain of sodium imparts a yellow color to the flame. But because the presence of iron can be detected in gold which has been condensed by steel instruments, it does not argue that its presence there exists in sufficient quantity to cause a discoloration on the surface of a gold plug of such proportion as to become an unpleasant sight to every eye. While the profession is undoubtedly under many obligations to Professor Chandler for his efforts in this direction, it is evident, to me at least that we must look to other sources than the attrition of steel pluggers for this disfiguration of gold plugs. It must first be determined whether this discoloration is of an organic or inorganic character. It has always been assumed by writers that it belonged to the latter class of compounds. Yet it is possible that it is a deposit of organic coloring matter, either from food that is taken into the mouth or some ingredient of the saliva. But for the sake of argument, and in view of the fact that there is no positive evidence to the contrary, we may assume that the discoloration of gold plugs is due to the presence of some metal such as iron, lead, copper or silver. Undoubtedly most of the gold prepared for the dentist contains traces at least of some of the above metals (whether sufficient to produce this discoloration or not is the question, yet a much larger quantity in all cases than could possibly come from the *wear* of a plugger point.) Assuming again that foils do sometimes contain traces of copper and silver (the metals *most* likely to exist in gold) in sufficient quantities to produce this discoloration, it is easy to see that the sulphides and oxides would be formed and the bad effect produced. For instance, if the gold contained copper there would or might be formed *cuprous oxide* ($Cu\,O$) which would cause a red appearance, or there might be *cupric oxide* ($Cu\,O$) or copper sulphide ($Cu\,S$) both of which would be black. Again, if silver were present *silver sulphide* ($Ag\,S$) would be formed and remain as a black insoluble discoloration on the filling, or if iron were present, *Ferric oxide* ($Fe\,O$) would be formed, thus giving a red appearance similar to the *cuprous oxide.*

The most feasable theory however is that the discoloration is due to a deposit from the saliva of some insoluble material—*perhaps metal*—for we do not find it in every mouth, even where the same make of gold has been used; it is only occasionally we find it at all. Sometimes it will be present on one plug, and perhaps the adjoining plug, made at the same sitting, is perfectly free from discoloration of any kind. In this latter case it would seem as if electrical currents had caused its deposition at a particular pole of the minute battery.

We know that forces—chemical and electrical—are at work in nearly every mouth, and at certain times (when there is an acid condition) in all mouths, forces which are capable of destroying and dissolving the strongest enamel, and which will as readily decompose and disintegrate many articles of food, thus setting free their component parts. By this action, iron, copper, lead, and other metals contained in food and medicine, would be deposited not only on the teeth, but on gold plugs. E. C. C.

—*Missouri Dental Journal.*

ARTICLE VII.

Radical Cure of Neuralgia of the Lower Dental Nerve.

On July 25, 1876, a woman was admitted into M. Terrillon's ward at the Hospital St. Antoine. Since January, 1875, she had been subject to attacks of neuralgia in the course of the right inferior dental nerve. The least touch, the action of speaking, of carrying a glass to the mouth, of mastication, increased the paroxysms of pain, which radiated along the lower jaw as far back as the ear. The patient, worn out by pain, and eating only with great apprehension, got thinner day by day, and sought assistance from surgery, as she had tried in vain all the medical resources used in similar cases.

The diagnosis was easily established. M. Terrollon was convinced that the neuralgia was simple, *i. e.*, of peripheric origin. There was no cerebral mischief, and pressure on the nerve diminished the pain. The neuralgia was localized to the inferior dental nerve along its course, for the mental nerve was the point of departure of the pain, and the contact of the teeth with cold water and food caused acute suffering. M. Terrillon resolved to divide the dental nerve after the method of M. Michel, of Nancy, an operation which has for its object the cutting of the nerve before it joins the dental trunk of the inferior maxillary. The patient now wishing to be rendered insensible, was placed in a chair before a window. M. Terrillon introduced into the mouth a double gag, which, depressing the tongue, gave room and light. A verticle incision, running from the last superior molar to the inferior, divided the buccal mucous membrane as far as the anterior border of the tendon of the temporal. With the finger and a canulated sound a way is made between the internal pterygoid and the branch of the inferior maxillary. After a little time the ridge of Spix, situated at the opening of the dental canal, is felt—the nerve is there, and M. Terrillon proceeds to divide it.

It is impossible, in spite of the employment of sponges and cold water, to see the bottom of the wound. He is prevented from taking up the nerve with a hook, and immediately performing resection, as some authors advise. "Having, then, my finger on the ridge," says M. Terrillon, " I try with a tenotome to cut the nerve trunk on the inner side of the jaw but my finger is so fast that I abandon this project, after many trials. The opening of the jaws producing tension of the internal pterygoid muscle, I remove the gag. Then, introducing the finger, I feel that it penetrates the wound more easily. I slide in the tenotome and perform section exactly on the branch rising above the ridge, without going too much in front or behind through fear of embracing the lingual in the section. At the moment of this procedure the patient uttered a slight cry, and a little jet of blood sprung into the mouth." The nerve being cut the patient felt relieved. The day after the operation it was clear that sensibility to touch, temperature, and to pain was abolished in the whole extent of the region of the chin. The patient left the hospital on August 6th, and was seen by M. Terrillon on November 18th. She had then all the appearance of health, contrasting singularly with her anæmic condition or her entrance to hospital. She declared she had not suffered any pain since the operation.

M. Terrillon offers the following observations and conclusions: (*a*) Section of the inferior dental nerve is indicated in all cases, when the neuralgia lasts many months, when it resists general medical treatment, and when the health of the patient suffers. (*b*) The operation should be performed as high as possible on the course of the nerve; thus recurrence will be less likely. (*c*) The method of Michel, consisting of section of the nerve before its entry into the dental canal by an incision made at the bottom of the mouth, should be preferred. It offers the advantages of not injuring any important part, of freedom against accident, of not leaving any external mark, and of not having been, up to the present, followed by recurrence. (*d*) This operation presents one inconvenience; it is a delicate one with all subjects, and difficult with many; but yet he can always manage to perform section. (*e*) Simple section ought to suffice in the great majority of cases. (*f*) Resection, which does not seem indispensable, still ought to be employed, with the aid of a special hook, when the wound is sufficiently large and not too dry so that the nerve can be easily seized.

Will the neuralgia recur? M. Letievant, an authority in such matters, says in his work on *Nervous Section*, 1873: "A comparison of facts teaches us that recurrence after section of the dental nerve takes place, especially in the first days of the operation; sometimes in the first month, rarely after a longer time." Cures which have passed over the first weeks ought to be considered as definite. In the case of M. Terrillon, the recovery having now lasted more than four months, ought to be considered as definite.—*Med. Examiner*, from *Bulletin de Therapeutique.*

ARTICLE VIII.

Anomalies in Digestion.

BY JAMES BLAKE, M. D.

One of the most curious features connected with the pathology of digestion is the great difference in relative digestibility of different sorts of food for different stomachs. I do not now allude to the differences met with in the capability of some strong stomach to digest all sorts of food, many of which are well known as unwholesome articles of diet to the ordinary every-day stomachs. But we occasionally meet with stomachs which quite upset the lessons obtained through St. Martin's gastric fistula, and which although certainly not strong, yet show a remarkable facility for digesting some of the normally most indigestible substances.

It has seemed to me that at least in some of these cases we have stomachs which bear a certain resemblance in their digestive capabilities to some of the lower animals. Nor is this at all surprising, for as we frequently meet in man structural resemblances to the lower mammalia in certain organs, I see no reason why we should not find functional resemblances as well. This a point in comparative physiology which has not, I believe, attracted the attention it deserves, and these observations are made more for the purpose of calling attention to the subject, in the hope of obtaining additional facts, than for any importance they may possess, although in a practical point of view anything that can throw additional light on some of the curious cases of indigestion we occasionally meet with, will be useful.

One of the most striking instances I have seen of this anomalous digestion, is that of a lady who has what may be called a decidedly weak stomach, a stomach to which grease in all its culinary forms is nearly poisonous; which utterly rebels against pies and cakes, hot bread and bacon, and in fact against most of the articles that are tabooed for weak stomachs; and yet she perfectly digests green cucumbers and green apples. In fact, when suffering from an attack of dyspepsia, and perhaps even vomiting the lightest articles of diet, the first thing that be digested is a laid green apple, and this, too, late in the evening before retiring. The same patient digests raw turnips and carrots better than when when they are cooked. Now, there can be no doubt that there must be something peculiar in the functional action of such a stomach; some peculiarity in the properties of the gastric juice, which enables it to act on these uncooked hard masses of woody fibre and cellular tissue in a manner different from the generality of stomachs, or at least of weak stomachs. If this peculiarity in the functions of the organ is connected with anything abnormal in its anatomy, I am unable to say; but there is one fact in connection with this case that might excite suspicion that it may be so, viz.: the existence of what may be called esophageal dyspepsia, or a habit of retaining a considerable quantity of food in the esophagus, and regurgitating it almost unchanged after it has been down some hours. Whether this is connected with the presence of a diverticulum, or from a simple enlargement of the esophagus, I am not prepared to say, but in either case we have an approach to the anatomical structure of the stomach found in ruminants, whose normal food is celular and fibrous vegetable tissue.—*Pacific Medical and Surgical Journal.*

ARTICLE IX.

A Simple Cautery.

One of the most useful means of applying the actual cautery has been apparently neglected or allowed to pass unheeded up to the present time, the simplicity of the method being probably the cause of its escaping attention.

It has long been a desirable thing, with the practitioner of dentistry, to be able to accomplish the cauterization of what is termed sensitive dentine, often found where the dental caries has attacked the necks of the teeth, near the margins of the gums; most of the cauterants in actual use being unreliable, or to a degree unmanageable, and liable to penetrate deeper into the structure, or injure the mucous membrane by running over it. This, to a certain degree, has been avoided by the use of the galvanic cautery; but the apparatus required for this purpose is both costly and cumbersome, beside being easily deranged, and somewhat difficult to apply to certain surfaces where, by the undercutting of the caries, the platinum point requires to be bent or hooked.

While operating on the 13th of March, for my friend, Dr. J. S. Walker, I attempted, by the use of a minute coal of fire upon a match-stick, to obtund the sensation of the superficial portion of such a cavity, as above described ; meeting with some difficulty in the breaking off of the heated portion, he suggested the use of a harder wood, and I immediately ignited the end of a stick of dental pivot wood, which wood, from its characteristics, being both dry and compressed, proved a most satisfactory and inexpensive means of obtaining the desired effect. It has since appeared to me that sticks of hickory, or any combustible substance that is dense, tough, and not readily consumed in the ordinary atmosphere, might be of service to the general surgeon, but particularly where the throat, nares, ear, uterus, or anus, are the points to be cauterized; or for the physician, where immediate vesication is demanded, it could be conveniently used. These sticks might be made more inflammable by soaking in something like a solution of saltpetre, before drying and passing through the process of condensation, which dentists accomplish by an ordinary drawplate, such as is used for making wire.

To use this, a suitable portion should be burned in the flame of an ordinary match for a few moments, and then, by blowing out the flame, the incandescent portion at the point may be brought to the shape desired, and the temperature raised by passing rapidly through the air, or, *vice versa*, lowered by allowing a trifling coating of ash to accumulate upon the surface. This will burn thus for one or more minutes, according as more or less is charred by the flame, and one or more of the small sticks are used singly or tied together, or the stick made of larger diameter.

It might also be that a tube of some non-conducting material might be filled with an ordinary lampwick, previously prepared, and by a spring regulated to keep the ignited portion of the combustible material constantly pressed out at one end.—*Prof. T. C. Stellwager, in American Journal of Med. Science.*

ARTICLE X.

A New Dental Inhaler.

The following is an extract from a letter to the Galvano-Faradic Manufacturing Co., 167 East 37th St., from Dr. D. S. Oliphant, of Toronto, Canada:

"I am tempted to mention a device of mine for use of chloroform. By its use I recently successfully chloroformed a patient in a dental office with only three quarters of one dram of chloroform, when previously, in the ordinary way, I had used *Three ounces.* I made an Inhaler out of a child's rubber band comb—bending the ends and fastening them together thus—O. Over the top of this oval I tie a piece of muslin, or linen, so that the interstics of the teeth of the comb are left open. The comb serves as a framework to keep the chloroform from touching the skin. I hang it over nose and open mouth, and rapidly drop 6 or 8 drops on the muslin diaphragm, after which *one drop per second* is quite sufficient to keep up supply of vapor. The operator, skillful dentist, could hardly believe his senses when he saw how small a quantity had sufficed, and how easily the patient (a nervous woman) breathed during the whole operation. He extracted three teeth—one upper molar and two eye teeth. If you think my device either good or new communicate it to whom it may concern or benefit."—*Physicians Monitor.*

ARTICLE XI.

Croton Chloral in Dentistry.

The specific effect of croton chloral hydrate upon the *fifth* pair in neuralgia suggested its use as an internal and local anæsthetic in toothache. I have derived prompt relief from its use in 5-10 grain doses in the toothache of dyspepsia and pregnancy, and in those aggravating cases which occur in rheumatic and neuralgic patients. Failing to relieve by the ordinary remedies a severe attack of toothache, due to dental caries, I found that a mixture of equal parts of crystallized carbolic acid, croton chloral hydrate and solid Japanese oil of peppermint, promptly removed the pain and obtunded all sensitiveness during the process of filling. I suggested the use of this compound to my dentist, who assures me that he has found it to be the "obtunder" he has used for deadening the pain of sensitive dentine, and for removing soreness of the gums, which sometimes results from filling and other operations upon the teeth. In toothache, after the mouth has been washed out with a solution of bicarbonate of soda in warm water, and the cavity of the tooth dried with a pledget of cotton-wool, a small piece of the latter should be soaked in the above mixture—gently pressed to remove excess of moisture—introduced into the cavity, and covered with a small piece of dry cotton-wool; or the latter may be first dipped into styptic-colloid or collodion, and then lightly pressed home. In filling teeth, when it is not necessary nor expedient to destroy the pulp by arsenic or other escharotic, nearly all sensitiveness may be allayed, during the preparation of the cavity, by the following plan: Arm a fine brooch with a small ball of cotton wool, dip it into the mixture (removing any superfluous material by a little pressure,) introduce it into the dental cavity, and retain in position by the introduction of a second piece of wool. In the course of five or ten minutes the cotton-wool may be removed, and the excavation of the cavity may be proceeded with until it again becomes sensitive, when the application should be renewed, and repeated as often as it may be necessary until the cavity is ready for the plug; a result which may be accomplished with little or no pain, and without injury or destruction of the nerve.

C. J. Cleborne, M. D.
Naval Hospital, Portsmouth, N. H.—*Med. Record.*

EDITORIAL, ETC.

Deaths from Nitrous Oxide Gas and Ether.—We have received from Dr. S. Parsons Shaw, of Manchester, England, a full description of the following case of death from Nitrous Oxide Gas, which appears in the June Number of this Journal. The following brief account is from the *Medical Times and Gazette*, of London :

"An inquest was held last week at Manchester on the body of Mr. George Morley Harrison, aged fifty-three, a surgeon in good practice, and formerly Lecturer on Medical Jurisprudence at the Manchester Royal School of Medicine, who died whilst under the influence of nitrous oxide gas, administered at his own request previous to having a tooth extracted by a neighbouring dentist. Mr. Harrison, it appears, being unnerved and excited, partly from the suffering he had undergone, and partly owing to the want of proper food, which the condition of his mouth had prevented him from taking, insisted on the inhalation being pushed until he should snore, and—for, at any rate, part of the time—held the mouthpiece in his own hand, and inspired very vigorously. The first attempt at extraction was made before he was fully insensible, and was abandoned until more of the gas had been given. Eventually, however, two teeth were removed. The patient did not appear to be coming round properly after the operation, and the dentist, taking alarm, sent for medical assistance. On the arrival of a surgeon, Mr. Harrison was pronounced to be quite dead. At the post-mortem examination there was found some fat about the heart; the cavities on the right side were distended with blood, while those on the left side were empty. The lungs on both sides were gorged with dark blood. All the other organs were healthy.

The jury came to the conclusion that the deceased "died from syncope during the administration of nitrous oxide gas for the extraction of teeth whilst labouring under fatty degeneration of the heart."

Very few fatal accidents have hitherto attended the use of nitrous oxide as an anæsthetic; hence it has come to be looked upon as almost free from danger. For minor operations it is administered every day, and often by persons who would shrink from the responsibility of giving chloroform. Dental practitioners especially use nitrous oxide very largely. A catastrophe such as has just taken place at Manchester serves to remind us that nitrous oxide can no more be said to be absolutely free from risk than any other anæsthetic with which we are acquainted. No opportunity, then, should be neglected of ascertaining the mode of action of nitrous oxide when it destroys life. In the only other fatal case which, so far as I know, has been recorded in England—I refer to the Exeter case—no inspection of the body was made. It becomes doubly important, therefore, that any fresh case should be reported with the utmost accuracy.

Now, judging from the facts of the case stated above, and especially from the condition of the thoracic viscera, found after death, it cannot, I think, be doubted that the jury were mistaken in their verdict, and that the case was one of death from asphyxia, not from syncope.

The question is of the highest scientific and practical importance. It is most undesirable that nitrous oxide should be credited with a paralysing influence over the heart, if it possesses no such influence. While again, looking at it from a practical point of view, we want to know in what direction we are to be on the look out for the first signs of approaching danger, and it will not do for our attention to be concentrated on the condition of the pulse and the circulation, if the real danger is from suffocation. It is stated that, in order to shield the dentist from blame, the medical witnesses somewhat encouraged the opinion which the jury embodied in their verdict. This however, I should be sorry to believe. I prefer to think that the jury, with the want of intelligence which is popularly ascribed to coroners' juries, misunderstood the drift of the medical evidence and returned their misleading verdict in spite of it."

The same Journal also records the death of a woman aged 55 years, from Ether and Nitrous Oxide Gas combined, which occurred at the Union College Hospital, the anæsthetics being administered for strangulated femoral hernia. Clover's apparatus was used. At the autopsy, stercoraceous matter was found in the trachea and right bronchus.

Solvent for Rubber.—The *British Journal of Photography* describes a new solvent which consists of a mixture of methylated ether and petroleum spirits—the common benzolene used for burning in sponge lamps. This forms the most rapid and, perhaps, the best solvent we have tried ; the mixture is as much superior in power to either of its constituents singly as the ether-alcohol is to plain ether in its action on paroxylin. We make a very thick solution by dissolving sixty grains of good india rubber in two ounces of benzolene and one ounce of sulphuric ether. If the india rubber be cut up fine and the mixture shaken occasionally, the solution will be complete in two or three hours, when it may be diluted to any required strength with benzolene alone. The india rubber should be as light colored as possible, and all the outer oxidized portions must be cut away. Shred the clean india rubber with a pair of scissors, and throw it at once into the solvent.

Symptoms Resulting from Anæsthesia by Ether in Young Subjects.—Dr. Leon Tripier read a paper on this subject before the French Association for the Advancement of Science. He related three cases in which the administration of ether for surgical operations was attended by an arrest of respiration, and though, after long efforts at restoration recoveries took place, the patients were placed in a most alarming condition. He also instituted experiments on young cats with ether, and found, as in young human subjects, an arrest of respiration often occured. Older animals were less liable to this accident. He, therefore, considers anæsthesia by ether in young subjects as dangerous, and that chloroform for them should be always preferred.

Indigestible Substances.—The *Physician* says : The question "How does desiccation convert steamed grains into a wood-like substance?" propounded in the *Times*, by the manufacturers of steam cereals, is easily answered. The gluten, softened by steam, is "fixed" or permanently solidified by drying, and is forever afterward insoluble and indigestible. The same effect is produced upon animal albumen—a kindred substance—and upon gelatine. Modern Chemistry teaches all this, and the experiment is easily tried. The richer the grain treated is in gluten, the more completely insoluble it is rendered. Thus wheat, steamed and dried, is nearly ruined in aroma, flavor, and assimilable nutriment, while oats are less seriously impaired, though rendered insipid and tasteless. The theory that the cereal grains can be in any way improved or their nutritive elements added to by steaming and subsequent drying, is something more serious than a fallacy, since it may induce ignorant persons to employ them as foods, and to suffer by their use.

Acquittal of Dr. Westlake.—The jury in the case of Dr. Warren C. Westlake, of Elizabeth, New Jersey, charged with manslaughter, in causing the death of Walter Lewis with chloroform, while extracting a tooth, rendered a verdict of not guilty.

MONTHLY SUMMARY.

The Local Action of Chloral Hydrate.—In an article in *L'Independente*, No. 6, 1876, Dr. GUIDO TIZZONI, of Pisa, observes that the first effect of the application of solution of chloral hydrate to parts deprived of epidermis and epithelium is a transient irritation, varying in degree with the strength of the solution. This is followed by an anæsthetic action, in regard to which the observations of Drs. Coignard, Horand and Puech, have been confirmed by the author.

The irritant action favours the development of cellulo-vascucar granulations, and accelerates the cicatrisation of solutions of continuity. The chloral acts also as an astringent, and as an antiphlogistic. The irritant action, which is generally of brief duration, having ceased, there is in a few hours an arrest of the inflammatory processes, including suppuration: this appears due to the retardation of the circulation and the constriction of the capillaries, as well as to minute coagula and embola, which are found in the vessels and cut off or diminish the local supply of blood— a fact which has been established by the experiments of the author and of Dr. Fogliata.

The most important properties of chloral in surgery are those which it possesses as a disinfectant, antiseptic, antiputrescent, and antifermentative remedy. The author has used it for the preservation of flesh, milk, urine, etc.; no change being perceived at the end of two months. He recommends chloral in ordinary surgical practice, as a preservative against local and general infection, and as a restrainer of suppuration.

He describes the experiments and clinical observations which he has made with regard to the action of chloral, especially as an antiputrescent. The ultimate results were always the same, differences depending only on the amount of chloral used. The solution which he employs is one of ten parts of chloral in fifteen of water.

He has treated, both in hospital and in private practice, many cases of acute and chronic urethritis with injection of chloral hydrate, in the manner recommended by Parona, and has found the result to be rapid cessation of the discharge, and cure of the disease without complications.—*Lond. Med. Record.*

Carbolized Camphor and its Therapeutic Applications—Dr Soulez, of Romorantin, has a paper on this subject in the *Bulletin Generale de Therapeutique*, Aug 30. Desiring to combine the valuable properties of carbolic acid and camphor, and founding his proceedings on the property possessed by certain acids of liquefying camphor, Dr. Soulez poured 2 grammes (30 grains) of carbolic acid solution (in the proportion of nine of carbolic acid to one of alcohol) on 12 grammes (180 grains) of camphor in powder, in successive portions, taking care to keep the mixture agitated. This produced a liquid of a syrupy consistence. Carbolic acid dissolves a larger quantity of camphor than that just mentioned, but in practice Dr. Soulez contented himself with a solution of 2.50 grammes (37½ grains) of powder for 1 gramme (15 grains) of acid. The product thus obtained is an oleaginous liquid with the combined odour of camphor and carbolic acid, which boils at a slightly elevated temperature without decomposing, does not mix with either water or glycerine, is decomposed by concentrated alcohol with a deposit after some hours of crystals of camphor, is miscible in all proportions with olive and olive oils, if poured in a boiling state into cold water immediately solidifies into a mass, and produces a red colour on the addition of nitric acid.

For dressings, Dr. Soulez uses mixtures of a twentieth part of carbolized camphor, either with olive oil or with infusion of saponaria (100 grammes of saponaria leaves with 1000 grammes of water) which makes an emulsion. A square of wadding soaked in the mixture of carbolized camphor and olive oil is placed in contact with the wound, and over this six other squares soaked in the emulsion of carbolized camphor and infusion of saponaria. To prevent evaporation, these are then covered with a thin layer of gutta-percha tissue, and the whole is secured by a piece of dry wadding as a bandage. It should be added that the whole wound, whatever be its nature, is washed before being dressed, with the emulsion. Thus applied, says Dr. Soulez, this dressing realizes all the favourable conditions inherent in Guerin's and Lister's method without its inconveniences. Usually the dressing is renewed every six days, sometimes being left in its place ten days, and up to the present time not the least irritation of the skin or of the wound has been observed, which could be attributed to contact with the carbolized camphor.

Dr. Soulez then proceeds to narrate some cases in which this preparation was successfully employed, and concludes by drawing attention to the following as the advantages derived from the employment of the carbolized camphor: 1. Diminution in reaction after great operations; 2. Cessation or lessening of pain; 3. Less abundance of suppuration.—*London Med Record.*

Rubber—Celluloid.—I wish to say a very few words in regard to the above, at the beginning of this new year.

After four years trial with celluloid, myself and many of my co-laborers find ourselves disappointed in its use. We make more failures in fits than we did with rubber. We have to grind a great deal, after we think we have a perfect articulation; and we find that the color fades. We find that many of the plates warp so as to be useless. We feel that we would be glad to go back to the use of rubber if it was not for *fighting the patent.*

We even think that we would take out a *license* and cease the warfare if Mr. Bacon would sell us licenses without asking us to swear that we had not used celluloid.

During the last four months several young dentists have asked my advice about taking a rubber license. I advise them to do it, both for their peace of mind, and the benefit of their patients. Really, as for *myself,* I have ceased to have any *money* interest in artificial teeth.—*Editor Missouri Dental Jour.*

The Preliminary Education of Medical Students.—There is a slight inclination on the part of a very few medical schools in the United States not to accept as a student a very grossly ignorant young man. The school at Portland, for instance, requires an applicant to know how to read and write English—not correctly, of course, but in some degree correct. In most institutions, however, it is entirely unnecessary that a matriculant should be able to do more than sign his name. He can enter, and it is possiple he can get through with no more than this.

Medical societies, therefore, would do wisely to take the initiative in this matter. It is gratifying to see that one in this State has done so, that of Alleghany county. The following is an extract from its by-laws:

"At the stated meeting in January, annually, the President shall appoint the following committee:

"A committee of three, to be called the Committee of Medical Examiners, whose duty it shall be to examine all applicants for admission as students under the tuition of the members of the Society. Said committee shall withhold their certificate from any applicant unless he be of good moral character, possess a good English education, and a sufficient knowledge of Greek and Latin to enable him to pursue his studies with advantage.

"And no member of this society shall receive any person as a student of medicine unless he presents a favorable certificate from this committee."

In one of our British exchanges the medical faculty of Glasgow University show the necessity of preliminary examinations, by quoting answers lately submitted by applicants. The best of these was that of a gentleman who understood the "Letters of Junius" to be letters written in the month of June.

But we need not cross the water to find such instances. Let it, however, be generally understood that medical societies are going to take such action as that above set forth and these examples will become rare.—*Med. and Surg. Rep.*

Blue Glass.—Nothing of a therapeutical character has made such an excitement among the non-professional public for years as General Pleasanton's Blue Glass Cure is creating just now. It is *the* topic in social circles, and a house with a southern window is not considered to be furnished until it has a foot square of blue glass suspended in it. The experiments are said to be most popular among those ladies whose adipose tissue is rather scant in comparison with their osseous development, and great things are in anticipation. Now is the chance for some of our pharmaceutical friends to make hay while blue sunshine is in fashion.—*New Remedies.*

Advice to Students.—A distinguished English Professor gives the following advice to students on the subject of examination: "It is unnecessary to advise you to avoid studying merely by way of preparation for examination. Work diligently, study thoughtfully and deliberately, above all, be thorough, otherwise your knowledge will be unaccompanied by that enlightenment of the understanding, that mental training, discipline and general elevation of the intellect which constitute in a word education. When you are thus educated, you will with ease and pleasure pass any examination in the knowledge you have thus acquired. All authorities on education, whether statesmen, teachers or examiners, regard 'Examination,' even by the most highly skilled Board, with ample time at its disposal and a wide area from which to select questions, as but a partial test of knowledge, and an extremely imperfect test of education."

The cramming process may do for a Freshman who has the whole course of study before him, and even though conditioned, by dint of hard study he may make up the deficiency; but an examination which has in view the entrance on a professional life, and such as involves great responsibility, can not be passed so lightly.—*Med Eclectic*

Stimulants Used by the Race—It is estimated that coffee, both beans and leaves, are drunk by sixty millions of the human frmily. Tea of all kinds is used by five hundred millions, and opium by four hundred millions; alcohoi, in its various forms, by five hundred millions of the human race. Tobacco is used by seven or eight hundred millions. These starting facts indicate a large proportion of the race using some substance that are either stimulants or narcotics. The work of the physiologist, in the future, will be to determine the true place in nature of these substances, and indicate where their use ends, and abuse begins.—*Quar. Jour. of Inebriety.*

An Iron Calculus.—A man in Paris recently passed a urethral calculus the size of a hazel-nut. Its passage was attended by severe nephritic colics. M. Cazeneuve found on examination, that it was entirely composed of almost pure peroxide of iron.—*Med. Record.*

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ARTICLE I.

Diseased Gums.

AN ESSAY BY L. C. INGERSOLL, KEOKUK, IOWA.

Read before the Iowa State Dental Society, May 2nd, 1877.

It is my wish in this paper to call attention to a subject which, it seems to me, is too often neglected by the profession. It is not my purpose, however, to give a thorough presentation of the varied diseased conditions to which the gums are subject ; but to notice those forms of disease most commonly met with and too often neglected. No mouth can be considered in a condition of health, however sound the teeth, unless the gum surrounding the teeth is healthy, and no dentist, in any treatment of the teeth, should consider them in a safe condition until the gums are restored to healthful firmness and color.

It is true of mankind generally that morbid and diseased conditions are not recognized unless attended with suffering, and usually, suffering of an acute character. Local disease of the gums is, in most cases, of such slow development as to be unnoticed, and the increase of the disease is so gradual as to arouse no suspicion of disastrous consequences. It becomes the duty of the dentist, therefore, to observe and to inform his patient of the threatening danger. The prevalence of diseased gums even in the mouths of those who are accustomed to employ dental skill on their teeth, shows neglect, or failure in treatment, on the part of the profession.

The evil of diseased gums is apparent in several particulars. Their thickened condition induced by inflammation, affords a lodgment for food and viscid mucus, which renders the mouth unsightly. The gums being tender to the touch, this foreign matter is not thoroughly removed. What remains, soon undergoes decomposition and emits a foul odor to taint the breath. The fermenting fluid in contact with the gum, irritates and increases the inflammation, till suppuration is induced or fungous growths appear, and disgusting tumors void their waste disorganized matter into the mouth. This vitiated fluid mingling with the saliva and food passes daily into the stomach to continue its harmful effect there. And we might trace it still farther, in a series of inevitable consequences that bring misery to life and terminate, in some instances, in death.

I have distinctly in mind now a case in my early practice, in which diseased gums, progressing slowly for a period of fifteen years, had deprived the stomach of its power, had undermined the nervous system, had seriously affected the bronchial tubes, and the patient had wasted away to a mere skeleton, confined to the house, and obliged daily to resort to her bed to recuperate the strength necessary to walk feebly about her room. All this while she was under the care of a physician of education, skill and experience who had bolstered her up with anodynes and tonics, but who never conceived the cause of her complicated troubles. Pain was the habitual experience of her life. Mastication had been impossible for years. She ate, drank and breathed *pus*. Every tooth and root was loose, and not one could be touched without causing severe pain. I removed more than twenty teeth and fragments of teeth as the first step in the treatment—the most excruciating operation that I had ever before or have ever since performed. In a few days she was able to say to me, when I called upon her, "I am very weak, but I am free from pain, and *perfectly happy!*—which I could not have said during the past fifteen years."

Although the stomach, in regaining its tone, was the source of some trouble, relieving the gums of the irritating and painful presence of the teeth was the beginning of new life and hope for the woman. After treatment of her gums for a few weeks I did not see her again for a year, when I could not recognize my former patient. She had added one-third to her weight, and her countenance and walk were the expression of health—and ever since—now more than ten years—she has been a healthy woman.

This was an extreme case: not in the *nature* of the disease but in its extent—involving the entire gum of both jaws—and in its long continuance. Like conditions may be found in many mouths confined to small areas, but demanding the careful attention of the dentist.

To understand more fully the diseases of the gums we need to consider the structure of this tissue. Time will not permit a full description, but I will remind you of a few facts. The nerves of the gum except when diseased, are not very sensitive. Hence they will suffer great abuse without giving the warning of pain. But when diseased, they become peculiarly sensitive, and are disturbers of the general health not only through their nerve connections, but through the stomach, by rendering mastication impossible without pain, and thus over-taxing and weakening the whole digestive system.

The mucous membrane and the capillary vessels of a healthy gum are exceedingly firm and tough. But when these vessels have for a long time been distended by congestion, their coatings become thin and weak, and will burst on very slight touch, so that ordinary mastication tinges the saliva and the food with blood.

In this outer covering of the gum are located the mucous follicles wherein is secreted the mucus and from which it is poured forth to lubricate the gums and prevent abrasion from the friction of mastication. They are larger and more abundant in the mucous membrane covering the gum than in other parts of the mouth, for the reason that the lubricating effect of mucus is not needed there, and at the gingival margin they are particularly prominent in the form papillæ, giving it a fringed appearance, and they supply mucus abundantly. The mucus is a secretion from the watery portion of the blood, combined with the animal matter of the wasting tissue itself; so the mucous follicles are in a measure excretory ducts. In a diseased condition of the mucous membrane, the follicular secretions are so changed in their character as to become putrid almost immediately after exposure, and at the margin of the gum where the greatest irritation is produced this degenerate fluid becomes so acrid as to dissolve enamel. This, to my mind, is sufficient to account for the wasting of tooth substance in pitted and grooved horizontal lines across the crowns of teeth. These grooves and pits may sometimes be found midway from the margin of the gum to the grinding face of the molars or cutting edges of the anterior teeth; or the effect may be seen in the cusps of the molars and canines. For, each of these points of attack was once at the margin of the gum bathed by this acrid fluid. The appearance in each case is that of having been dissolved by some agent acting from without, and conforms to no law of "*suspended development*" during the process of tooth formation.

We see the same effect of this mucous decay of the teeth at every period in life, in lines of decay at the margins of the gum. But while the teeth are advancing by successive stages of development—growth and cessation alternating—there is time only for the formation of very shallow grooves which mark these alternating periods.

Beside this peculiarly organized mucous membrane, there is also, covering the gum, that indefinitely defined coating known as the *epithelium.* Some writers seem to confound this with the mucous membrane itself. By some it is considered as not having an organic structure at all, but having only a mechanical arrangement of the scales of which it is composed—and that these scales are only coagulated mucus. I shall not stop to consider whether it is vital or non-vital, but only refer to its connection with the mucous membrane.

The term *epithelium* is derived from two greek words *epi*, upon, and *thele*, a nipple. It is applied to designate a covering of some exposed parts of the body not covered by a true skin. While it is dermatoid in the purposes which it serves, it is not of the organic structure of the *cutis vera.* It is irregular in its thickness, scarcely perceptible around the papillæ of the mucous follicles from which it is continually rubbed off, while between them it is of such thickness as to be sometimes readily observed by the naked eye, giving a whitish appearance to the gum. Although it is sometimes spoken of as that in which the tooth germs have their origin, I have never seen any description of disease pertaining to the epithelium, to which, if it be an organic structure it must be liable.

Below the mucous membrane lies a thick firm tissue composing the body of the gum. In its outer part it is stellate and areolar in its structure, but growing more dense and fibrous in its inner portion where it unites with the periosteum of the alveolar border. It is well supplied with blood-vessels—most abundantly in its inner part. In this tissue is the chief seat of diseased gums. When oral disease pertains to the mucous membrane it will manifest itself in other parts of the mouth as well as on the gums—will be found in the fauces, and may extend down the esophagus to the cardiac opening into the stomach. This disease though found on the mucous membrane covering the gums could not be strictly denominated a *disease of the gums.*

So multitudinous are the causes, primary and secondary, predisposing and exciting, which produce disease of the gums, that I shall not even attempt an enumeration of them ;

but shall allude only to such as are most common and plainly recognized and which demand immediate removal as a first step in the remedial treatment.

We are all too well aware of the condition of the tissues of the mouth arising from filthy habits. Not that dentists need special commiseration on this account. For, those who employ the services of a dentist—except it be for the momentary operation of extraction—are, for the most part, those who take care of their teeth and wish to preserve them. Particles of food, coagulated mucus and loosened epithelium scales tending to decomposition, cannot remain day after day in contact with the necks of the teeth without causing irritation of the gum and increase of vascular action. The gums are reddened and swollen.

In such cases the only treatment needed is home-treatment with toothpick, soap, and brush, daily and habitually applied. Gums unused to the brush are tender to its touch, and multitudes of persons, through the influence of newspaper advertisements of various dentifrices and tooth washes, are led to believe that they need some medicated powder or lotion to " harden their gums." While the fact is that in ninety-nine cases in a hundred, cleanliness and the friction of the brush persisted in, will, in a few days or weeks, give to the gums health and firmness. To one not habituated to performing this cleansing, a hand-glass is as needful as eyes are in doing any thing else to which we are not accustomed.

But, if in addition to this soft creamy accumulation mentioned above, tartar is found deposited, it needs the careful attention of the dentist, as no dentifrices or home treatment will remove it. Often this concretionary deposit will constitute the chief amount of the accumulation, varying in thickness according to location and form of the teeth. But the gums may not be so seriously affected by its irritating presence but that a careful and thorough removal of the deposit with instruments, followed by daily toilet cleansing, will effect a cure.

Not so, however, in every case. The tartar produces a congested, hypertophied and sensitive condition of the gum which will not permit the free use of the brush. The gum is loosened from the teeth, and the excessive growth of the gum in the inter-spaces of the teeth forms long points of gum extending from one-half to two-thirds the length of the crowns, behind which the deposit is continued, to remain a perpetual source of disease in spite of toilet cleansing. The gums must be reduced. How shall this be done?

It has been recommended in such cases, to scarify the gum freely and use astringent washes. The objection to this treatment is, that it requires too long a time, and lacks thoroughness.

Nitrate of silver has been recommended both for its astringent and caustic effect. I object to nitrate of silver because the nitric acid in the remedy, acts upon the tooth substance to destroy it; and the action of light upon the nitrate of silver blackens the teeth. Other caustics have been used with better effect and less harm to contiguous parts. But all caustics, continued in the treatment day after day, keep the mouth sore and deprive the patient of a comfortable meal during a long course of treatment.

My method is to remove with scissors the apices of the gum in the inter-spaces of the teeth and cauterize the whole gingival margin with carbolic acid. A single operation of this kind is in very many cases sufficient, if the parts are kept clean. Other cases may require the application of a caustic a second or a third time at intervals of two or three days. This method is speedy and thorough, and rarely attended with much pain. In worse cases, involving the entire margin of the gum, I have removed with knife and scissors the entire marginal border in one strip from the second bicuspid on the left around to the corresponding tooth on the right, and have witnessed the most decided beneficial results in two or three days time.

I prefer carbolic acid to other caustics in common use, because it has more power over morbid growths, and tends to promote healthy granulation over raw surfaces. Chloride of zinc is not so superficial in its action is less easily limited in its effects, and endangers the destruction of parts beyond what you desire, besides being very painful when applied. If only a slight caustic effect and stimulation is desired I would use creosote. Not the creosote commonly sold in the shops, made from coal tar, which scarcely differs from carbolic acid. But the old fashioned creosote made from pine tar, with the lingering odor of pitch in it.

This was formerly known as pyroligneous acid, and sometimes called oil of smoke. It is now quite difficult to obtain. It is more commonly the case that carbolic acid, and creosote are sold out of the same bottle. Because of this I desire here to notice some of their physical and chemical properties, by which they may be distinguished the one from the other. Creosote is an acetic acid combined in small proportion with various oily impurities. Carbolic acid is neither an acid, nor an oil, but is more nearly an alcohol. Creosote combines very sparingly with water, and only by agitation, while carbolic acid combines very readily and in all proportions with water. Creosote will not crystallize; carbolic acid in its pure and most caustic form readily crystallizes in all cool weather. Creosote changes color, and becomes very dark on exposure to light; carbolic acid is unchanged by light. Creosote is sparingly destructive to vital tissues, while carbolic acid is powerfully so. In all cases where it is desirable to produce a decided caustic effect, I prefer the crystalline carbolic acid. But for the removal of hypertrophied gum, nothing is so speedy, thorough and certain, as knife and scissors.

So far, I have alluded only to those cases of diseased gums affecting all, or a large number of the teeth, and caused by the presence of tartar or other foreign deposit. I wish now to notice those chronic conditions which, though caused by tartar, irritation of broken teeth, or other means, may exist in mouths well cared for, as a great source of annoyance to the patient, and endangering the loss of the teeth so affected.

Continual irritation may cause a tumefied condition of the gum. Sometimes limited to the apices of the gum in the inter spaces of two or three teeth only. When examined with a glass, such diseased parts look like sponge or growing moss, and on very slight touch bleed freely, and are of the nature of the epulis tumor. In eradicating this disease, the operation must be thorough; cutting out fully to the line of the healthy gum, and through to the periosteum of the alveolus. Then bathe the cut surfaces with the caustic carbolic acid, to destroy any fibers of morbid growth that may possibly be left by the knife.

Perhaps the worst and most unmanageable of all troubles connected with the gums, is that wasting away of the gums and alveolar processes which first denuded the necks of the teeth, then the roots, till finally the loosening requires the extraction of the teeth as the only remedy. In some cases it is confined to a single tooth, to the anterior portion of an incisor or canine, or to the palatine root of an upper molar. In other cases several teeth are involved, as, for example, the inferior incisors; and the gum and parietes of the alveolus are being destroyed on all sides of the roots.

This destructive disease has formerly been the subject of considerable discussion by the profession and some success has been claimed in the treatment of it—even to the reproduction of the alveolar processes. But for the most part, dentists have abandoned the hope of success in restoring the lost tissue, or even checking the disease in such measure as to restore loose teeth to firmness in the jaw for any considerable length of time. So far as I have had experience, or have made observation of the treatment of others, the most that is accomplished, is, to render such teeth comfortable in the mouth, while the destruction goes on, though retarded by treatment.

Recently the attention of the profession has again been called to this disease by the supposed discovery of new pathological forms, and a correspondingly new treatment has been proposed. Dr. Riggs, of Boston, has been prominent in suggesting this new pathological condition, and for this reason we see it sometimes denominated "Rigg's Disease." His opinion is that, though primarily pertaining to the gum, in its wasting form, it pertains to the alveolar periosteum, which being destroyed by inflammatory action, necrosis and wasting of the parietes of the alveolus is certain to follow.

Whether this be the correct theory of the disease or not, is yet to be proved. So many sound and valuable teeth are annually lost through its ravages, it becomes the profession to entertain with favor, any suggestion that looks plausible as to diagnosis and treatment. Some physiological facts in relation to tooth development may help us in our judgment of the truth or falsity of this theory. When first formed the alveolus is a bony crypt completely walling in the growing tooth. As the period of the emergence of the tooth arrives the outer wall of the alveolus is absorbed to let the imprisoned tooth through. The crown having thus reached a full exposure the margin of the alveolus is reproduced to embrace the neck of the tooth. Through the prior sacular stage of development there is also a series of movements in emargination and reproduction of the alveoli in accommodation to the necessities of the forming teeth.

These changing movements are produced by the slightest exciting causes. It is sometimes assumed that there must be great pressure to induce absorption of bone. The growing tooth, however, but touches lightly if at all the inner wall of the alveolus, and at its gentlest touch the door is opened.

Now consider what this susceptibility to absorption and reproduction under the slightest physiological causes must become when all the tendencies are reversed, and natural excitants have been supplanted by destructive irritants. In this pathological state very slight causes are sufficient as irritants, to work destruction of the alveoli. It seems therefore reasonable to expect that the disease which begins in a *slight irritation of the gum* might, if continued, make destructive work, when it reaches the periosteum and the alveolar processes.

The treatment prepared, therefore, in accord with this theory is to remove by a surgical operation the necrosed and suppurating margins of the alveoli, and scrape and smooth the part operated upon down to the healthy bone.

This treatment is so in harmony with my own experience for years in the treatment of diseased gums, that I shall not hesitate to adopt it.

In a case which I have examined, and which will be presented to me for treatment immediately on my return to my office, I shall not only remove, as my custom is, the granulated and tumified gum which covers the wasting margins of the alveolus, but extend the operation with knife and caustics to the alveolar seat of the disease, and interestedly await results.—*Dental Register.*

ARTICLE II.

Disintegration, Arrestation and Preventation of a Recurrence of Caries upon the Proximal Surfaces of the Teeth.

BY MARSHALL H. WEBB, LANCASTER, PA.

(Read before the Iowa Dental Society, 1877.)

Disintegration of animal and vegetable tissue not only takes place, but it can also be observed throughout the whole universe of nature.

Castles built of the almost everlasting granite, and monuments of marble, erected to perpetuate the memory of departed worth, or to chronicle memorable events, as well as huge rocks in and by the sea, all gradually undergo disintegration through the play of the elements—air and water.

Although age by age, and century by century, may roll into eternity without there having been any visible manifestation of disintegration, yet, into the crevices already contained, or those being made, in the mineral there will be deposited disintegrated vegetable tissue and granulated minerals; and as these crevices enlarge, and these particles accumulate, then, through moisture and the genial warmth of the sun, vegetable forms spring up from germinal matter finding lodgment within the fissures of the rock. Such growth continues, becomes more extensive, the fissures enlarge; and this taking place from century to century, castles and monuments crumble and chaos again ensues.

With regard to the animal kingdom, we find there are remote and proximate causes of disease and death. The remote causes of disease and death are many—connected, directly and indirectly, with every element of the system; and can only be fully ascertained when pathology becomes an exact department of science. The proximate causes are few—consisting of the negation of fundamental principles of life.

Disintegration of dental tissue takes place through the action of acids. In uncleansed places upon enamel the *Leptoturix buccalis* accumulates; and since Loeber and Rottenstein announced that the parasite flourishes most luxuriantly in acid solution, it has been inferred that acids are thus more closely confined and hold to parts of tissue unwashed by saliva and uncleansed; and that the advance of decay is, therefore quickened. The Leptothrix penetrates the clefts and interstices of disintegrated enamel, and upon reaching the dentine, aids in accelerating the rapidity of caries.

Disintegration upon the proximate surfaces of the teeth commences, almost invariably at or near the point or part of enamel in contact with the adjoining teeth—just above the point of contact in the upper, and just below it in the lower teeth—and after the dentine is reached, caries advance beneath the plate of enamel in all directions. Decay very rarely *commences* near the necks of the teeth, because they are free from contact at such part. The gum, when in a normal condition, encloses and protects these parts so perfectly that the cementum and the portion of enamel which may be beneath its margin (as well as gold when it has been properly inserted and its surface finely polished) is thoroughly protected from discoloration and disintegration.

When through disintegration, the enamel of the proximate surfaces of the bicuspids and molars is penetrated, and the underlying dentine is attacked by caries, the cavity of decay should (excepting in rare instances) be opened into from the masticating surface, after separation by pressure of wedges of wood has been made, and the rubber dam applied. Even where but little structure *appears* to be disintegrated, this surface would be almost approached upon the perfect removal of the disintegration, and thus the plate of enamel would be liable to fracture, were hard surfaces to come in contact with it while food is undergoing comminution. It is far better to cut away this portion of enamel than to sacrifice such tissue along the entire proximate surface; besides, a better view can thus be obtained, a more perfect removal of disintegrated structure be facilitated, and the gold more perfectly introduced and solidly impacted. The adjoining sulcus or fissure is usually in such a condition as to require attention, and it should also be prepared and this operation completed at the time the other is performed. The entire cavity should be so prepared that no disintegrated enamel remains, and the edges be evenly and finely finished by means of fine " plug-finishing burs" and strips cut from emery cloth—from Nos. ½ and 0—and a groove should also be cut around the cavity about where the enamel and dentine coalesce. This groove should be quite well marked along the buccal and palatal or lingual walls.

When a cavity has been prepared as just described, a *starting point* should be made in that portion of the cavity which extends near the neck of the tooth; not, however, in a direction where the plugs may, in any manner, be injured but about where the dentine forms a coalesence with the other hard tissue of the part— the enamel or cementum. This pit should only be of sufficient depth to retain the small pieces of gold first introduced and impacted while other such pieces are being built upon them.

Gold in the form of cylinders and pellets should not be used in the performance of operations (unless cavities of decay are regarded as simple *holes*) because gold in such form cannot be carried to, and built in place (without the liability of movement when being introduced and impacted) so well as when light foil is folded upon spunk (which has been covered by kid) into a tape-like form of about six or eight lines in width, and then taken up with the foil-carriers and cut into parts about a line wide. A half leaf of foil for small, a whole leaf for medium, and two leaves for large operations, should be folded and cut in the manner just stated.

The fingers should never be brought in contact with gold because this, as well as moisture of any kind, will bring about irreparable injury, so far as that portion of gold is concerned. The law of affinity between particles must be obeyed—cohesion must not be impaired—else an enduring, useful, and beautiful structure cannot be erected; neither can the precious atoms, strong as they are "in solid singleness," exhibit enduring strength unless the gold be closely packed and the combination of the atoms be dense. Pure, and therefore cohesive gold, should be used for all operations which are intended to best subserve the purpose of disintegrated or lost tissue, but the highest type of operations is not attained by the use of cylinders and pellets, because, in addition to reasons already given, cohesive gold cannot be used so as to bring about a result as nearly perfect as when foil is prepared as before described, and carefully and thoroughly introduced and impacted, and properly formed and finely finished.

The gold should not only be built against every part of dental tissue, but be impacted as perfectly as possible along and over the margins of enamel, and fully out to the proximate surface of the teeth adjoining—using a part of such surface as a matrix. In such cases, as throughout almost all operations, all the gold should be impacted by aid of the mallet. The electro-magnetic mallet, *when properly adjusted, understood and operated*, is far superior to any other such instrument. By its aid an operation can be more easily, rapidly, and perfectly performed than in any other manner. For this priceless boon we are indebted to Dr. W. G. A. Bonwill, of Philadelphia, who, if he did not first conceive of the idea of the application of electricity to this purpose, first produced a practical electro-magnetic mallet. Modifications of the instrument have been made by others, but such of these changes as are worth adoption, add to rather than detract from the value of the electro-magnetic mallet, and increase, rather than cancel, the debt of gratitude we all owe to Dr. Bonwill.

After the gold has been impacted, piece by piece, so that the substitution of lost tissue is complete, a fine "separating file" should be used to cut away the surplus material, and to aid in making the filling conform to the original contour of the teeth; after which strips cut from emery-cloth of the finest grades, should be so manipulated as to more perfectly finish the surface of the gold and to leave the parts nicely formed. All this must be done previous to the removal of the rubber dam, after which the finishing should be completed by the use of finely pulverized pumice and silex, both mounted upon linen tape. These may be followed by fine rouge applied upon a strip of fine chamois skin. This leaves a finer finish than a burnisher, but not so bright a polish. The finishing of the gold upon the masticating surface should be done with corrundum cones and Hindoos tan stones, followed by pumice mounted upon wood, leather or rubber points. A sharp, fine "plug-finishing burr" may be required to aid in making the filling conform to the depression in the masticating surface. All these cones, stones, points and burrs should be operated with the "dental engine."

Operations upon proximate surfaces of the cuspid and incisor teeth should be performed in a manner somewhat similar to that already indicated. as well as in accordance with correct and efficient judgment. Gold should not be exposed to view whenever it is possible to prevent it, but where exposure is unavoidable, and the operation perfectly performed, and the filling artistically formed and its surface finely and beautifully finished, the gold will not be repulsive to the eye.

One should always endeavor to perform such operation, and so finish each filling that it shall conform to the line which defined the original fiugre. This contour line should be restored to that degree commensurate with the extent of destruction of tissue. The contour of the parts operated upon should be so restored in gold that the prominent portion of the solidly impacted, well anchored, and finely finished gold comes in contact with the adjoining tooth, (or with a filling in such tooth) near the buccal and masticating surfaces of the teeth, and in such a manner as to leave the margins of enamel free from contact with another tooth at every point.

When such operations as referred to have been properly performed and a space, as in nature, remains at or near the necks of the teeth, and gold comes in contact with gold, or the normal structure of the tooth adjoining, near the buccal and masticating surfaces, and there be freeness of contact of enamel, caries will rarely if ever recur; because (in addition to the operation having been quite perfectly performed and in accordance with the correct principle) the margins of enamel against which the gold has been built and finely and evenly finished, are almost constantly quite well washed by the saliva which is kept in motion by the action of the muscles of the cheek, lips, and tongue.

It has been asserted that gold is "a purely mechanical remedy" for the prevention of a recurrence of decay, while the oxide formed from silver or tin, or both, as in an amalgam, "turns the teeth to a dark color and checks caries." This "preservation" (?) has been said to be "chemical."

If carious dentine has been properly and thoroughly removed, and every particle of disintegrated enamel taken away from and about the margin of the cavity, and gold be properly prepared, introduced, and impacted against every part of the prepared structures without there having been the slightest movement of such gold, and the fillings have then been properly finished down to, and polished with, the surrounding enamel, there will then be no space for moisture to enter, and there can therefore be no chemical action and no electric currents evolved between gold and calcium. The only manner in which this can then occur is by disintegration at some point or points about or around the margin of enamel, against which the gold has been impacted, and this must have been imperfectly done or the margins of enamel must not have been free, else this disintegration would not, in all probability, have taken place. If the operation be properly performed, and the margin of enamel be free from contact with the teeth adjoining, and have been so shaped as to be cleansed by the action of saliva, the parts cannot well be otherwise than free from a recurrence of caries.

It is a difficult task to thus perfectly perform operations, and especially in some instances and under some conditions. To accomplish all which I have just indicated—that almost any of the duties of the faithful and conscientious practitioner may be performed—it is necessary for one to understand the anatomical, physiological, and pathological conditions and relations; in a word, diseased tissues cannot be properly treated—really first-class operations performed—without some such knowledge as well as keen perceptions and the exercise of correct and efficient judgment.

Almost the same care is required for the preservation of the teeth by the arrsetation of caries, and the prevention of its recurrence, through the filling of the cavity of decay with another material, such as tin foil, as with gold, notwithstanding the assertion that an amalgamated mass *chemically preserves* the remaining structure. Oxidation cannot take place where moisture cannot reach; hence, where moisture is there may not only be such oxidation but also chemical action, evolution of electric currents, and disintegration and destruction of tissue, except in those rare instances where there is *black* decay—where the salts formed by decomposition of the mineral portion of the teeth are insoluble, and become paralyzed in a negative position to the decomposition agent.

It seems fair to conclude that, in consideration of all this, there is no point about any of the materials which have so far been used for the preservation of the teeth that is equal to gold, even if, as has been asserted, it is "a purely mechanical remedy," in contradistinction to amalgam with its "*chemically preservative influence.*" If a fully qualified practitioner and capable operator desires to perform operations and to preserve the teeth as perfectly as possibly, he should (unless it be in very rare instances) make use of gold as a permanent filling for the preservation of the valuable organs he may be called upon to operate, and if he does not possess the ability to perform operations as they ought to be performed, then, rather than attempt to save these organs by unskillfully and imperfectly inserting gold in cavities of decay, one should make use of some material which, because of its plasticity, may enable him to more perfectly perform the operation.

Failure in dental operations is attributable, in the majority of instances, to the very imperfect manner in which such operations are performed, and all this should be duly and honestly considered and acknowledged before the cause of failure is attributed to acids and electric currents evolved from chemical action.—*Missouri Dental Journal.*

ARTICLE III.

The Discovery of Anæsthesia.—CONTINUED.

BY J. MARION SIMS, M. D., NEW YORK.

On the evening of the day (September 30, 1846,) that Morton had this interview with Jackson, he gave the ether to a patient, and extracted a tooth without pain; and on October 16 he gave it in the Massachusetts General Hospital to a patient who had a tumor exsected from the neck by

Dr. John C. Warren. On the next day (October 17,) he gave it to another patient for Dr. Hayward, who exsected a tumor from the arm. He gave it also for Dr. Bigelow with equal success; and from that time it came rapidly into use by the whole profession throughout the civilized world. On October 27, 1846, Jackson and Morton published to the world, by letters patent, the discovery of *letheon* as an anæsthetic, but it was seen at once that their letheon was nothing more or less than pure sulphuric ether. Jackson soon resigned his interest in the patent to Morton, and sent a communication to the French Institute claiming the honor for himself of the discovery of anæsthesia by ether. Morton then set up his claim as the real discoverer, giving Jackson credit only for some unimportant suggestions. While Jackson and Morton were sending bulletins to the Institute of France, Wells sailed for Europe in December, 1846, to lay his claims before the French Institute as the real discoverer of anæsthesia. His mission was a failure, and he returned home in March, 1847, to prepare the documents upon which his claim was to be presented to the Institute. And thus this tripartite war was waged with great fury; Morton and Jackson denying everything to Wells, and denying everything to each other. They denied that nitrous oxide gas had any anæsthetic properties. Wells brought forward his Hartford experience, and he gave the gas for surgeons in general practice, proving that prolonged operations could be performed under its influence. Dr. Marcy exsected a large gland, the patient being under the gas for fifteen minutes; Dr. Ellsworth amputated a thigh; and Dr. Berresford exsected a large tumor under its influence—all in Hartford. But notwithstanding all this, Wells saw nitrous oxide gas supplanted by sulphuric ether as an anæsthetic—ether which he had tried and rejected. He saw his claims as the great discoverer of anæsthesia unrecognized abroad, disputed and set aside at home, and he was disappointed and dispirited. He then went to New York to lay his claims as the discoverer of anæsthesia before the profession of the great metropolis. Soon after his arrival in New York, he showed signs of mental aberration, and on January 14, 1848, in a fit of madness, he ended his life with his own hands.

A few years after the death of Wells, Morton applied to Congress for a grant of money for the discovery of anæsthesia (1853.) The friends of Wells opposed the grant on the ground that Wells was the real discoverer. Then it was that the friends of Long came to the front and opposed the claims of Morton, on the ground that Long was the first discoverer of anæsthesia. The Mortonites admitted that Long was the first to use ether as an anæsthetic, and the first to perform operations under its influence, but they urged that Long's claims were invalid, because he had not published his discovery in some scientific paper. They admitted that Wells tried to make the discovery, but asserted that he failed, because nitrous oxide gas could not produce insensibility to pain. They even attempted to prove this before a Congressional committee appointed for this purpose. Morton declared that nitrous oxide gas never had, and never could, produce the effect claimed by Wells. To disprove this assertion, Prof. John Frederick May, of Washington, went before the Congressional committee and demonstrated the fact that nitrous oxide gas, given according to Wells' plan, could and did produce insensibility to pain.

If nitrous oxide gas can produce insensibility to pain, as Wells claimed, then Wells demonstrated the fact that anæsthesia can be produced by the inhalation of this gas. Let us see how curiously, how providentially, this question has been settled, and settled to the satisfaction of all unprejudiced minds. Colton seems to have been incidentally an important agent in establishing the truth. We have seen how Wells' discovery grew out of Colton's lecture in Hartford in December, 1844. Colton continued his popular lectures on this subject for many years after this. In 1862, he lectured in the town of New Britain, Conn., and, as usual, related how the great discovery of anæsthesia by the use of nitrous oxide gas was made, giving Wells the honor. An old lady present wished to have some teeth extracted; she was afraid to take ether or chloroform, and she requested her dentist, Dr. Dunham, to get Colton to give her the gas for their extraction. He did so, and taught Dr. Dunham how to make the gas. One year after this (1863), Colton returned to New Britain on his usual annual lecture tour, and he found Dunham extensively engaged in extracting teeth under the influence of the gas. Colton then seeing that the extraction of teeth under the influence of the nitrous oxide gas could be made a painless and paying business, induced Dunham to go with him to New Haven, with the understanding that Colton was to lecture and give the gas, and Dunham to extract teeth. After the first day Dunham returned home, and Dr. Smith, of New Haven, took his place, and in a few weeks people came by hundreds to take the gas and get teeth extracted. This experiment convinced Colton that it could be made a great business in a larger field, and he went to New York and opened the Colton Dental Institute, where, since 1863, he and his agents have given the gas to 97,000 persons without an accident.

All this disproves the assertion made by Morton and his adherents. If nitrous oxide gas produces anæsthesia to-day in the hands of Colton and others, it did it in the hands of Wells in 1844, and Wells therefore preceded Morton in the discovery of anæsthesia. Nitrous oxide gas has been used in general surgery by many eminent surgeons in New York, Philadelphia, Baltimore and elsewhere. It has been used successfully in New York, by James R. Wood, Carnochan and others. The writer has used it in difficult and prolonged operations (ovariotomy), requiring thirty, forty, fifty-seven and sixty minutes, and in one case one hour and fifty minutes, and always with the most satisfactory results. And this goes to prove that Wells was right in claiming precedence over Morton in the discovery of anæsthesia by nitrous oxide gas in 1844.

Now let us summarize the facts set forth in the foregoing historic sketch. We know,

1st. That since 1800, the inhalation of nitrous oxide gas produced a peculiar intoxication, and even allayed headache and other minor pains.

2d. That Sir Humphrey Davy proposed it as an anæsthetic in surgical operations.

3d. That for more than fifty years the inhalation of sulphuric ether has been practiced by the students in our New England Colleges as an excitant, and that its exhilarating properties are similar to those of nitrous oxide gas.

4th. That the inhalation of sulphuric ether as an excitant, was common in some parts of Georgia forty-five years ago, though not practised in the colleges.

5th. That Willhite was the first man to produce profound anæsthesia, which was done accidentally with sulphuric ether in 1839.

6th. That Long was the first man to intentionally produce anæsthesia for surgical operations, and that this was done with sulphuric ether in 1842.

7th. That Long did not by accident hit upon it, but that he reasoned it out in a philosophic and logical manner.

8th. That Wells, without any knowledge of Long's labors, demonstrated in the same philosophic way, the great principle of anæsthesia by the use of nitrous oxide gas (1844.)

9th. That Morton intended to follow Wells in using the gas as an anæsthetic in dentistry, and for this purpose asked Wells to show him how to make the gas, (1846.)

10th. That Wells referred Morton to Jackson for this purpose, as Jackson was known to be a scientific man and an able chemist.

11th. That Morton called on Jackson for information on the subject, and that Jackson told Morton to use sulphuric ether instead of nitrous oxide gas, as it was known to possess the same properties, was as safe, and easier to get.

12th. That Morton, acting upon Jackson's off-hand suggestion, used the ether successfully in the extraction of teeth, (1846.)

13th. That Warren and Hayward and Bigelow performed important surgical operations in the Massachusetts General Hospital (October, 1846,) on patients etherized by Morton, and that this introduced and popularized the practice throughout the world.

In Boston, Mass., a monument has been erected to the discoverer of anæsthesia, but no man is designated thereon by name. The citizens of Hartford, Conn., have erected a bronze statue of Wells (by Bartlett) in their Capitol Park, claiming for him the discovery of anæsthesia. This is as it should be. We have no objection to it; and would suggest that the names of Long, Wells, Morton and Jackson be inscribed on the Boston column, one on each side, as co-discoverers of anæsthesia. The State of Georgia will, at no distant day, erect at its Capitol or its University, a statue of Long, who was unquestionably the first discoverer of anæsthesia.

All the claimants of the honor of discovering anæsthesia are Americans. To each is due a certain measure of credit, but no one man can claim this great honor exclusively. The names of Long, Wells, Morton and Jackson will doubtless be associated as co-laborers in the great work, and to these must be added the immortal name of Sir James Y. Simpson, who introduced chloroform and enlarged the domain of anæsthesia.

Sir James received the highest honor from his government in recognition of the great service he had rendered humanity. I wish we could say the same of our benefactors and government. Our great republic leaves our discoverers and scientists to rest in obscurity and to starve.

Long lost his all during our great civil war, and in his old age he is now being worked to death for the daily bread necessary to support himself and family.

The fate of Wells, Morton and Jackson is most pitiable.

Wells, disappointed in carrying off the honor of the great discovery of anæsthesia, became insane and committed suicide in New York in 1848.

Morton disappointed at not receiving a pecuniary recognition from Congress for his labors, fretted himself into a congestion of the brain. In July, 1868, he returned to New York from Washington in the wildest state of excitement. Fatigue, anxiety and sleepless nights had exhausted his vital powers. Dr. Lewis A. Sayre and Dr. Yale were called to him on the 15th July. They considered his condition as critical, placed him in the hands of a trained nurse, ordered leeches to his temples, cups on the spine, and ice to his head. Dr. Morton would not submit to treatment. As soon as Dr. Sayre left, he ordered his buggy to go to the Riverside hotel, saying he knew he would soon be well if he could get out of the hot city. He drove furiously up Broadway, and through the Central Park. At the upper end of the Park, he leaped from his buggy, and ran to a lake near by to cool his burning brain. Being persuaded to get into his buggy again, he drove a short distance, then leaped out, and jumping over a fence, he fell down in a state of insensibility. He was then taken moribund to St. Luke's Hospital, where he died an hour or two later.

Jackson has been for some time in an insane asylum, hopelessly incurable.

How mournful the fate of these remarkable men! How sad to think that their lives were embittered with envy, jealousy and uncharitableness towards each other! Let us forget their faults, and remember only the good that has resulted from their labors.

It is said that "The evil that men do lives after them." But here the good that these men did will live after them, and live forever.

Vaccination is perhaps the greatest boon ever conferred by science on humanity. Anæsthesia is the next. England gave us the one. America the other. England recognized the labors of Jenner, not, however, in a manner commensurate with the magnitude of his work. America should recognize the labors of Long, Wells, Morton, and Jackson, if not in a manner commensurate with the value of their work, at least to such an extent as to relieve the necessities of their several families, thereby proving that Republics are not always ungrateful. Government aid, voluntarily tendered at this time, would be acceptable to all of them, for they are all really in need of it. Each of these families ought to receive at least one hundred thousand dollars.

I propose, then, that the whole medical profession, North, South, East and West, unite in asking Congress, at its next session, to appropriate this sum, as an anæsthesia fund, to be divided equally between the families of Long, Wells, Morton, and Jackson.

One hundred thousand dollars is a small sum to offer where men have sacrificed their lives for the good of the whole civilized world, leaving their families in straightened circumstances. How small this pittance when measured by the benefits these men conferred on the world!

Let us, as Americans, rise above all party, all prejudice, all sectionalism, and demand of the Government this appropriation for the great work accomplished by these martyrs to science and humanity.—*Virginia Med. Monthly.*

ARTICLE IV.

The Dangers of Chloroform.

The trial of the Rahway dentist for causing the death of Walter E. Lewis with chloroform has attracted a great deal of attention, not only on the part of the public, but of the profession. As will be remembered, last January the boy, shortly after having eaten a hearty supper, called upon the dentist for the purpose of having a tooth extracted. Chloroform (slightly mixed with ether) was administered while the patient was sitting in a chair. After a few inhalations with the napkin close to the face, the pulse began to flag, when the tooth was hurriedly extracted. The child's head then rolled to one side, and respiration ceased. The patient was left in the chair for several moments without any attempt at resuscitation, and until a neighboring physician arrived. Attempts at artificial respiration were then made, the galvanic battery applied, and all the other means usually employed on such occasions, but to no purpose.

The post-mortem examination revealed all the organs in a healthy condition. The heart was free from fatty degeneration, and was flabby; the right side contained a small quantity (half an ounce) of dark fluid blood, while the left side was entirely empty. The blood was dark and fluid. As far as could be judged from the autopsical lesions, the victim was in good health at the time of the accident. The coroner's jury brought in a verdict against the dentist, charging him with gross carelessness in the administration of the anæsthetic. The Grand Jury sustained the charge and the case was regularly tried in the court of Oyer and Terminer. The charge was manslaughter.

The prosecution endeavored to prove that the defendant did not use the ordinary precautions in giving the anæsthetic; that he was intoxicated at the time; that not a sufficient amount of air was allowed, and that the death was directly caused by such acts of carelessness. It was shown that the child had a full stomach at the time of taking the anæsthetic, that neither the pulse nor the respiration was watched during the administration, that the tooth was drawn when the patient was in a dangerous condition, and that the patient was left in the chair after the accident for several minutes without help.

As might have been anticipated, the charge of drunkenness could not be satisfactorily sustained. The experts for the prosecution stated that it was improper to administer chloroform while the patient had a full stomach, or was in a sitting posture; that it was always the rule to examine the chest organs; and, in case of doubt, the stomach; that a full stomach and the upright position invited accident; that a failure of the pulse and respiration demanded an immediate resort to artificial respiration.

The main argument of the defence was based upon the fact that death not infrequently occurs during the different stages of anæsthesia without any apparent cause, without any better explanation than that afforded by the vague term, idiosyncrasy. It was also proved that the defendant was quite accustomed to give chloroform, and that he administered it in the usual manner for dental operations.

The judge in delivering his charge stated that, the burden of proof resting upon the State, the benefit of a doubt belonged to the defendant. Reciting the well-known aphorism that a practitioner is only expected to exercise ordinary skill in the practice of his profession, the question was one of degree rather than kind, and was, under the circumstances, to be settled by the jury. The ruling was to the effect that a practitioner was not accountable for the death of a patient which death might have been prevented by extraordinary skill on the part of another. This was the charitable construction which the law placed upon the want of skill possessed by the prisoner. Why this should apply in the case of so dangerous an article as chloroform does not appear, more especially when it was used contrary to the rules laid down by authority.

Although it could not be proved that death from chloroform was produced as the direct result of carelessness, the presumptive evidence of such a fact was very strong. A full stomach is not of itself a cause of death in chloroform, although few medical men would be willing to run the risk of its influence as an impediment to the action of the lungs or heart, especially when the patient is in an upright position. The impaction of vomited material in the trachea is another element of danger; but as no such accident occurred in this case, the consideration of its possibility, was for obvious reasons, not allowed. The law can really hold no one accountable for accidents which might have occurred from negligence. There must be a direct association between cause and effect. If the patient in question had died by suffocation as the result of food in the trachea, the full stomach would have been a more important factor in the case. The absence of any positive proof that the posture, full stomach, rapidity of administration, deficiency of atmospheric air, individually or collectively, had any positive and direct effect in producing death in this case, gave the defence a wide latitude for instilling doubt in the minds of the jury. The opinion of the medical experts was to the effect that the chloroform was carelessly administered, and that the fatal issue was thereby invited. By an oversight on the part of the prosecution, there was very little stress laid upon the neglect to revive the boy the moment the signs of danger appeared. Instead of attempting this the dentist ran for help, and when help arrived several minutes afterwards, the child was still upright in the chair. This at least does not prove the exercise of even ordinary skill in cases of danger. There was a reasonable chance that the child might have been saved if resuscitation had been resorted to at once. It is impossible to say how many lives might be sacrificed during anæsthesia, if every one followed the practice of the Rahway dentist.

The neglect to place the child in the recumbent position as soon as danger appeared, was the strongest point against the prisoner. There does not appear to be the slightest excuse for it. No one has a right to use an agent known to be treacherous and dangerous unless he is competent to exercise requisite skill in counteracting bad effects when they show themselves. If the dentist possessed such skill, he did not use it. Whatever may be said of the other circumstances of the case, the omission to perform so obvious a duty as placing the boy in a proper position immediately after the accident, and resorting to the ordinary means for overcoming asphyxia, syncope, etc., amounts professionally speaking, to criminal neglect. But, as we before remarked, very little notice was taken of this, and the defendant was acquitted.

The result of the trial does not help to establish any new principle in regard to the administration of chloroform in dental practice. Notwithstanding, twelve intelligent men in New Jersey have decided that no fault can be found with the administration in this case, the profession at large will still hold to its settled opinions, and still lean to the safe side, declining to follow so questionable an example.—*Editorial in Med. Record.*

ARTICLE V.

Tetanus.

BY N. F. BROWN, M. D.

A paper read before the Detroit Academy of Medicine.

This is a disease which has perhaps baffled the skill of the learned of the profession, in regard to its pathology and treatment, as much as any in the catalogue of diseases.

Tetanus is defined as a functional affection of the muscular system, in which there is continued rigidity of the muscles, accompanied with spasms, generally of a tonic character. Tetanus frequently arises from wounds or injuries, when it is designated as traumatic tetanus; occuring otherwise, it is termed idiopathic tetanus.

The important varieties of this disease are the traumatic and idiopathic. The latter variety is seldom seen.

Tetanus occurs in all ages, from early infancy to old age, but authors generally agree that it attacks the younger members of community, and that it is usually of the traumatic character.

Climate seems to exert a decided influence upon the disease, cases occurring much more frequently in warm, and tropical regions than in temperate or cold latitudes. The causes of the disease are numerous, but prominent among these are wounds, particularly lacerated wounds; and it is worthy of notice that tetanus frequently results from a very slight wound, and that extensive lacerations are not so apt to be followed with the disease. All constitutions are susceptible to the disease, but generally the subject is one of debility, yet in hot climates a robust laborer is as apt to have tetanus from a slight wound as his weaker companion.

Th diagnosis is generally easily made, but the physiological effects of strychnia may be mistaken for tetanus.

When we look at a case of tetanus, we are astounded at the unknown morbific agent, or agents, which produce this terrible condition; and as post mortem examinations have thrown but little light on its pathology, we are compelled to treat the disease impirically. As I am not able to add anything to the literature of this subject, I will report upon a case of the traumatic variety which came under my care a few months since.

In the evening of the 28th of last September I was called to see a German, married, thirty-six years of age, light, wiry frame, nervous temperaments, and exceedingly irritable temper.

This man, although a " hard drinker," was industrious, and could work at anything from " roust-about" to blacksmithing and carriage making, and while thus employed, tramped upon a rusty nail, which passed through the sole of the shoe and entered the great toe, passing through close to the bone. After removing the nail he bathed the toe with cold water, and as the wound was not painful, continued work, and after one day the discharge ceased, the wound closed up; but on the fourth day it became painful and slightly inflamed, and on the fifth day he complained of aching in the lower extremities and " stiffness" in the neck and back.

In the evening, when I called, I found him sitting in a chair, perfectly rational, but quite sensitive and anxious; complained some of sore throat, but muscles of the face were not yet affected, but movements of the body caused great pain in the posterior muscles of the neck and back.

I gave chloral and bromide of potassium every hour in doses of twenty grains, but he was not able to take more than three doses, as trismus took place shortly after taking the third dose. In the morning I found him in true tetanic spasm, and all the muscles of the trunk and extremities seemed to be involved, and the body inclined to opisthotonos, the rigidity of the muscles being so severe that the body could have been wholly raised by lifting at either extremity. Deglutition being almost impossible, as even the contemplation of food or drink would induce severe spasm, I gave one grain of sulphate of morphia hypodermically, which had the effect of decidedly ameliorating the suffering of the patient.

He regained the use of his arms for a short time, which, previous to this, were immovable. During this time of relief considerable nourishment was taken in a liquid form, and the patient became quite cheerful, and expected to recover. He also took large doses of quinine, bromide of potassium, and belladona during this time, but after about six hours of partial relief, the spasms became more frequent and severe, and swallowing being impossible, I again gave morphia subcutaneously, but without decided effect.

The mind of the patient continued perfectly clear, but the suffering was indescribable, and continued till the fifth day, when there was considerable diminution of pain and spasm, lasting about one hour, when the patient gave a terrible shriek, the body assuming the position of emprosthotonos, which continued a few moments, and death came to the relief of the sufferer.—*Detroit Med. Journal.*

ARTICLE VI.

The Literary Estimate of Medical Art.

It requires but a slight tincture of literature to notice how physicians have, as a class, gained in social standing since the revival of literature, and especially since the birth of scientific observation, properly so called.

Take as an example of the sixteenth century, Montaigne, of the seventeenth Moliere, and of the eighteenth Lesage, all names of the highest note in literature, and compare their frequent descriptions of medical men and medical art with those in the current literature of this century, and how striking the contrast!

In that admirable and characteristic one of Montaigne's essays "On the Resemblance of Children to their parents," he gives vent to all his scorn and contempt for physicians. He ransacks antiquity for anecdotes to cast contumely upon them. He quotes with zest the reply of Nicoles to a physician who boasted of the greatness of his art: "Yes," replied the Greek, "that's so, it gives you the privilege of murdering with impunity." He cites with pleasure the law of the Egyptians, who made the doctor responsible for the life of the patient, if he was not cured in three days. He asserts that Cato, the Censor, did a meritorius act in banishing all the physicians from Rome (which Cato never did by the by.) All this and much more he brings in as germane to the subject of his chapter, by introducing an anecdote of his old uncle, who, when he was told that the doctor had been sent for, threw himself back in despair and exclaimed, "I am done for, then."

The doctor of medicine was the favorite butt of Moliere's wit. The "faculty" is represented as a compound of ignorance, pedantry and intolerance; their consultations are jealous quarrels or bragging speeches; their great anxiety that their rivals shall not succeed! One of them says: "Since heaven has made the people so infatuated with us, do not let us open their eyes by our quarrels, but rather profit by their silliness." Another tells the father of a sick young lady, "if your daughter does die, you will have the consolation of knowing she died according to proper forms. Better to die according to rule than recover against rule."

Lesage, in the famous picture of Dr. Sangrado, has left an immortal satire on the profession; but it is but one of many passages in his works where he heaps his ridicule on our avocation.

But see how great a change takes place after the commencement of scientific thought in the latter half of the last century.

The great GOETHE was one of the first to recognize it. In his beautiful autobiographical work, "Truth and Poetry from my Life," he tells us—

"At Strasbourg, the greater part of my associates at meals were medical students. These, as is known, are the only students who instruct themselves with energy concerning their science and profession, beyond the usual hours of study. This lies in the nature of the case. The objects of their labors require the greatest thought and are of the highest kind; they are at once the most simple and the most complex. Medicine concerns the whole human race, because the whole human race are concerned with it. All that the youth learns points directly to a weighty, indeed dangerous, but in many senses a remunerative profession. He throws himself, therefore, with passion, to find out what is to learn and what to practice, in part because the things themselves interest him, and in part because of the pleasant prospect of independence and riches which is opened to him."

Elsewhere he tells us that there are but two vocations the pursuers of which are received as intimates and equals by those of the loftiest birth and most exalted positions, the ministry and medicine, because, he adds, at some period in every life the devoted services of these two are imperative and priceless.

So we could quote fromBalzac, from Dickens, Thackeray, from hosts of novelists and dramatists of lesser note, in whose pages similar tributes are paid to the importance and to the real present worth of the medical art of this century. Indeed, the writer who would dare to indulge now in anything like the contemptuous expressions of Montaigne would very affectually write himself down an ass, for there is too much of positive knowledge and efficient remedial resources in the medical art of to-day for any one to contemn it, or for any man of sense to dispense with it.—*Editorial in Med. and Surg. Reporter.*

ARTICLE VII.

Case of Exsection of Half of Inferior Maxilla for Caries; Reproduction of Bone.

Dr. Robert A. McLean, Adjunct to the Chair of Surgery, University of California, reports (*Western Lancet*, April, 1877,) the case of Lena T., aged four years, who had been troubled with an enlargement of the left lower jaw since January, 1876. In the following May, the mother of the child consulted Dr. W. H. Mays, who found upon examination that there was extensive caries of the jaw, and sent the case to Dr. McLean for operation.

The general health of the child seemed fair. She was ruddy and had a good appetite. The left side of the face was greatly enlarged. Immediately beneath the angle of the jaw there was an opening through which pus escaped. There was also an opening in the gums behind the last molar tooth. The teeth upon the affected side were irregular, and in an advanced stage of decay. The probe, when passed into the external opening, came in contact with denuded bone in all directions. The mother stated that she first noticed a slight enlargement in January, after one of the back teeth had been removed. Pain was complained of, and the swelling continued to increase until March, when the skin broke, below the angle of the jaw, and a large amount of pus escaped. The pain now became less severe, but the face continued to swell on that side.

On May 21st, with the assistance of Dr. Mays and others Dr. McLean removed the left half of the jaw. Chloroform having been administered, an incision was made down to the bone, commencing at a point an inch below the articular extremity, along the posterior border of the ramus to the angle, and then forward along the inferior border of the body of the bone, to a point an inch to the right of the symphysis menti. A vertical incision was then made in the median line of the chin, commencing above, at the lower border of the inferior lip, and passing downward to join the horizontal incision. The vessels having been ligated, the periosteum elevator was introduced into the anterior extremity of the wound, and, proceeding backward along the body and ramus of the jaws, the bone was easily cleared of its membranous investment. The periosteum had been so thoroughly separated by the effects of the disease, that no difficulty whatever was met with in disarticulating the bone. It slipped out of the periosteal pouch like a finger out of a glove. In order to preserve the contour of the chin and the lower line of teeth, Dr. McLean decided to remove the bone no further toward the symphysis than the second incisor tooth, although there was considerable carious bone extending an inch to the right of the median line. The bone was divided with the chain-saw, and removed. The tissues of the chin were next lifted from the remaining half of the jaw, which was scarcely scraped, an inch to the right of the symphysis. Several small scales of bone which were detached, were removed from this locality.

The edges of the incision were brought together, and retained with silver suture, except at the point of junction of the vertical and horizontal incisions, where a small opening was left, in which was placed a tent to admit of drainage from the denuded surface of the remaining bone. The water dressing was then applied.

Immediate union occurred, except at the place where the tent had been allowed to remain. A slight discharge continued for three weeks from this opening, and then the entire wound healed, including the opening behind the angle of the jaw.

Four months after the operation the deformity was so slight as scarcely to be noticed. The lines of union were almost entirely obliterated. The bone was reproduced to an extent sufficient to admit of perfect motion of the jaw and the performance of all the functions of the mouth. About this time she unfortunately contracted diphtheria, and died after an illness of thirty-six hours.—*Monthly Abstract of Med. Science.*

ARTICLE VIII.

Michigan Dental Association.

The President, Dr. G. R. Thomas, has appointed the following Fellows of the Michigan Dental Association to fill the Standing Committees, viz:

Anatomy and Histology.—D. C. Hawxhurst, D. D. S., Battle Creek; E. G. Douglass and G. W. Stone, M. D.

Physiology.—Prof. J. A. Wattling, D. D. S., Ypsilanti; W. D. Tremper, D. D. S., and R. H. Tremper, D. D. S.

Chemistry and Materia Medica.—I. Douglass, D. D. S., Romeo; R. S. Bancroft and J. E. Post, D. D· S.

Hygiene.—B. T. Spellman, Detroit; J. Lathrop and H. H. Jackson.

Pathology and Semeiology.—J. A. Robinson, D. D. S., Jackson; G. H. Mosher, D. D. S., and Thomas Rix.

Therapeutics.—J. W. Finch, Adrian; M. H. Knapp, and W. P Morgan, D. M. D.

Surgery.—D. W. Smith, Jackson; W. H. Jackson, D. D. S., and E. Hunter.

Education and Etiquette.—E. S. Holmes, D. D. S., Grand Rapids; T. R. Perry and J. C Parker.

Publishing.—E. S. Holmes, D. D. S., Grand Rapids; G. R. Thomas, D. D. S., and W. D. Tremper, D. D. S.

Executive.—G. L. Field, D. D. S., Detroit; J. A. Watling, D. D. S., and D. W. Smith. With the President, Vice President, Secretary and Treasurer, ex-officio.

Board of Censors.—Prof J. A. Watling, D. D. S., for one year; D. C. Hawxhurst, D. D. S., for two years; W. H. Jackson, D. D. S., for three years.

Consulting and Visiting.—G. R. Thomas, D. D. S., for one year; A. T. Metcalf, D. D. S., for two years; B. T. Spellman, for three years.

These gentlemen are expected to be prepared, and to report, either in person or through the Chairman of their respective committees on some point of the general subject assigned them, at the next session of the Michigan Dental Association, to be held at Ann Arbor on the 9th day of October, 1877, at 2 o'clock P. M.

The Secretary would respectfully suggest the following points for discussion by the several committees, viz: *Anatomy, &c.* The Anatomy and Histology of the dental pulp

Physiology.—The provisions of nature for the protection of the dental pulp threatened with disease, and to what extent can they be relied on.

Chemistry and Materia Medica.—The chemical constituents, and medical properties of Lacto Phosphate of Lime.

Hygiene.—The prophylactic measures best adapted to prevent the consumption of the dental organs.

Pathology and Semeiology.—The symptoms of Exodontosis (dental exostosis), and the nature of the affection.

Therapeutics.—The medicinal remedies for Dental Neuralgia.

Surgery.—The surgical treatment of the Dental Pulp, diseased by the decomposition of the dentinal tissues.

There are other very important subjects to be considered at this meeting, and it is hoped and expected that every Member of the Association will be present, and prepared to do his duty.

A general invitation is hereby extended to all dentists—and every one interested in dental progress—to be present.

E. S. Holmes, *Sec.* M. D. A.

ARTICLE IX.

Adænoid Tumor of Soft Palate.

On April 14th, 1877, Peter T——, aged thirty; American born; laborer; called to consult Dr. Haywood and myself in regard to a tumor of the soft palate. It is situated to the left of the raphe, is of firm, dense inelastic consistence, movable, the appearance of the mucous membrane over it is normal, and it is about the size and form of a hen's egg. The lower portion extends backward and occludes the posterior nares. The tumor first made its appearance about nine years ago and was slow in its development, attaining nearly its present size within about three years. The past two or three months it has began to grow again and gives the patient great uneasiness. His general health is good and presents a good family history.

April 21st. I removed the tumor, being assisted by Drs. Max and Haywood of this city. The operation performed consisted in making an incision over it and then enucleating, the greatest part of the enucleation being effected with the finger. After the removal of the tumor, the mucous membrane contracted so much, that the edges had to be brought together by silk sutures. No anæsthetic was used. There was very little hemorrhage, the tumor being fed only by capillaries. The soft palate was not lost. The tumor is enclosed in a sac and contains fatty substance, there being very little, if any, connective tissue. It is larger than anticipated before its removal, being near the size of a turkey's egg. The parts healed kindly and in five days after the operation there was no wound at all. As can be easily imagined, it was a great source of annoyance, interfering with his breathing and deglutition. In fact it is difficult to realize that one could live at all with such a large tumor of the soft palate. Hence this case is interesting:

1st. From the unusual locality of the tumor.

2nd. From its unusual large size in that locality, and

3rd. From its remaining the same size for about six years and then suddenly growing.—*W. W. Taylor, M. D., in Nashville Med Journal.*

ARTICLE X.

On Dyspepsia.

At a late meeting of the Harveian Society of London, Dr. Farquharson read a paper on this subject.

Attention was directed to the state of the tongue in dyspepsia. A deeply fissured tongue often meant little; whereas a thin white fur, composed of minute dots, was generally found along with pain immediately after food. Pain after a longer interval was accompanied by a pale, flabby tongue, with reddish tip and centre. The treatment of dyspepsia consisted of two parts, that of food and that of drugs. The latter was the principal part with patients applying for gratuitous relief. The pain occurring immediately after food was usually relieved by alkalies; whereas acids were indicated where suffering was not experienced until an hour or two after the commencement of the digestive act. For the relief of the nausea and sickness remaining after the bowels were thoroughly cleansed, nothing was so effectual as hourly drop-doses of ipecacuanha wine. Nux vomica was also a valuable remedy. Pain might be but the protest of the stomach against an overload or be the result of a deficient tone, from general nervous exhaustion. In some cases each meal was followed by diarrhœa; and for these cases attention was directed to Ringer's plan of minute doses of the liquor hydrargyri perchloridi. In speaking of diet, Dr. Farquharson pointed out that there are three forms of dyspepsia: 1. The dyspepsia of fluids, as it is called, where the stomach seems intolerant of all forms of fluid. 2. The digestive derangements following intemperance in the matter of animal food; and, 3. The dyspepsia connected with indulgence in tea, or other warm and weak infusion of tannin.—*Med. and Surg. Rep.*

ARTICLE XI.

Sub-periosteal Surgery.

At the Congress of German Surgeons in Berlin, in April, the President, Professor von Langenback, showed to the Society some specimens of sub-periosteal surgery, which Professor James R. Wood, of Bellevue Hospital, New York, had expressly sent over to the Congress by his house surgeon, Dr. Wiggin. The object of chief interest was an inferior maxilla, which had been completely regenerated after excision. The patient was a young woman, eighteen years old, who suffered from phosphoric necrosis of the lower jaw, the result of working in a match factory. The whole inferior maxilla was affected, and the entire bone was removed sub-periosteally at two separate operations. The patient made a good recovery, and returned to her former occupation, but died three years later, from cerebral abscess. Dr. Wood was fortunate enough to obtain the whole skull. The new maxilla was small, but complete and symmetrical, and must have proved of great benefit to the patient. By the side of the preparation the necrosed jaw which had been removed was displayed. The President stated he had operated in four cases for phosphoric necrosis of the inferior maxilla, and showed specimens and photographs of patients in whom the bone had been reformed. These cases proved that the newly produced jaws remain, although it was an admitted fact that in subperiosteal excision of the superior maxilla there was only slight new osseous formation. He thought that if the whole inferior maxilla was to be taken away, it was better to do so by two operations rather than by a single one, as if the jaw is removed altogether at once, retraction is apt to follow. In conclusion, he thanked Professor Wood for his kindness in sending his specimens to Germany.—*Med. and Surg. Reporter.*

EDITORIAL, ETC.

The Dental Office and Laboratory.—We are pleased to again welcome a new series of this new dental publication, the second number of which has just been received. The general plan is the same as the first series, and the quarterly numbers contain some of the best of original and selected articles.

It is published as before by Johnson & Lund, of Philadelphia. The following extract is from an article by Professor Buckingham, on Advertising:

"The Dentists, so far as advertising is concerned, may be classed with the Medical profession, but in their intercourse with their patients they are usually much more communicative, and are willing to inform them of not only what is needed to be done, but the best manner of doing it. Advertising, like all other good things, may be abused; as when the merchant condescends to extol his goods above his neighbors: or say he can sell the same class of goods much cheaper than they can be bought elsewhere, and intimates that if they sell them at the prices he does, they must sell inferior goods, as he has facilities for obtaining his stock that no others have; or when a manufacturer happens to come across the goods of another manufacturer, which are more or less imperfect, and compares them with some of the best of his own, magnifying the imperfections on one side and the perfections on the other, and publishing them as inducements to draw customers. It can hardly be said that they are doing to others as they would like others to do unto them, and if they treat those in the same business in the manner indicated they are likely to treat their customers worse; for we may lay it down as a rule that a person who will condescend to resort to treachery to obtain customers, will not hesitate to deceive them when they deal with him. Some think if they can push clear of the law, they are justified in doing anything. This class usually find their position in society sooner or later. The lawyer who takes advantage of all the quirks and quibbles of the law, may clear his guilty client, but he is not doing the community a good service.

The medical man is prevented, by the rules of the profession, from advertising at all. He may put his card and location in the papers, and he may put on his sign "surgeon," "oculist" or "aurist," but further than that he must not go; if he does, he is expelled from the profession; so that those who commence to advertise usually go the full extent. They do not hesitate to promise the most certain cures in all cases that come to them; they have a specific for every disease, denouncing others around them as quacks, while they are the greatest quacks themselves. If they are successful in deceiving the community, and make money, they are tolerated in society; and if they can give parties, they will always find enough people to attend them. But they cannot remove the impression from the honest portion of the community that their course has been a deceiving one.

The Dentists are classed with the Physicians; to advertise is considered derogatory to their standing in the profession, and when they resort to those notorious advertisements which we continually see in the public papers, they place themselves in a position that no respectable person envies. No one wishes to associate with a notoriously bad person. Those who commit acts which the laws punish are afterwards marked by society, and are spurned; but those who escape the law are many times the most culpable; for the person who will deliberately and systematically deceive and swindle, is worse than one who steals from necessity. It is not the fact of advertising that should degrade the person. Dentists all issue cards, or, when they open an office or remove to other localities, either publish or send notices to their patients and others, announcing these changes. It is only when they condescend to the class of advertisements which we see every day in the public papers, that they are to be condemned; for, as we have stated, those who will deceive to obtain practice, will not hesitate to deceive in their practice."

Meetings of Dental Associations and Societies.—THE AMERICAN DENTAL ASSOCIATION meets in Chicago, August 7th, 1877.

THE SOUTHERN DENTAL ASSOCIATION meets at Deer Park, Md., August 14th, 1877.

THE AMERICAN DENTAL CONVENTION meets at Deer Park, Md., August 14th, 1877.

THE PENNSYLVANIA STATE DENTAL SOCIETY meets at Minequa Springs, July 10th, 1877.

THE MARYLAND AND DISTRICT OF COLUMBIA DENTAL SOCIETY meets at Deer Park, Md., August 14th, 1877.

Donation from Prof. Henry S. Chase.—The Baltimore College of Dental Surgery has lately received one hundred valuable microscopical specimens of the human teeth, beautifully prepared and ready mounted for investigation with the microscope, all of them being the work and gift of Prof. Henry S. Chase, D. D. S., M. D., of St. Louis, Mo.

OBITUARY.

Thomas T. de Graffenreid, D. D. S., a regular graduate of the Baltimore College of Dental Surgery, of the class of 1854, died at Oakland, Colorado Co., Texas, at 11 o'clock P. M., 16th of August, 1875, of consumption, to which was added cancer of the tongue. He was a native of Mechlenburg, Virginia, but a resident of this county for twenty years. At the breaking out of the war, he enlisted in Capt. Jno. C. Upton's Co., of this county, and went to his native state to do battle for the cause he loved so well; at Richmond the company was attached to the 5th Texas Regiment, Hood's Brigade, and known as Company B. He was never very robust, but served as a private in the Company to the close of the war. Returning to Columbus, Texas, he resumed and pursued the practice of Dentistry, until a few months before his death. His failing health forced him to discontinue the practice. His afflictions were borne with patient resolution and fortitude; he was a kind-hearted husband and father, and one of our most honored, worthy, and useful citizens. He was an exemplary member of the dental profession, was sober, upright and prudent in his daily walks of life. He was frugal, but owing to the small practice this place and county afforded, he lived up to his income, and left but little to his widow and three small children. Peace to his ashes.

M. E. Tarvin, D. D. S.

MONTHLY SUMMARY.

Precautions in Using the Hypodermic Syringe.—In the last volume of the *Transactions* of the West Virginia State Medical Society, Dr. **John Frissell** relates a case of mammary cancer proceeding from the puncture of a hypodermic syringe. He adds the following directions regarding the use of this instrument:—

In the first place the needle is to be polished and washed until it becomes perfectly clean and smooth.

Secondly, after thoroughly cleansing the inside of both needle and syringe, the fluid to be injected is to slowly drawn in.

Then, thoroughly onointing the needle with a solution of carbolized glycerine (glycerine eight drachms, carbolic acid one drachm), the skin at the point selected for the injection is to be seized between the thumb and forefinger of the left hand, lifted up and made tense, and the needle pushed through at right angles, taking special care that its point neither touches muscle, gland, or other solid tissue. The fluid should be then slowly injected into the cellular tissue. After the withdrawal of the needle should be placed over its point of entrance and the part rubbed and pressed until it becomes perfectly smooth and flat.

Should there be any irritating ingredients in the injected fluids their action, of course, must be regarded as independent of the condition of needle and syringe.

When I have been careful to follow strictly the direction, above given, in the use of the hypodermic syringe, I have seen neither sores, tumors, abscesses, nor bad results of any kind follow.—*Med. and Surg. Reporter.*

Death from Chloroform.—A case of death whilst under the influence of chloroform recently took place at the Derby Infirmary. Deceased, who was fifty-six years of age, was about to undergo an operation for fistula and hemorrhoids, but before he was ready for operation, the respiration suddenly became very irregular, he struggled violently, and the pulse, which had up to this time been good, ceased. In spite of all the means resorted to for a considerable time, he showed no signs of rallying from the first. The quantity of chloroform which had been poured into the lint-holder was in all about three drachms. The *post-morten* examination did not reveal any organic disease.—*Brit. Med. Journal,* March 17, 1877.

Action of Anæsthetics on Muscles and Nerves.—M. Couly, of Paris, finds that when animals are killed by chloroform, ether, or chloral, the muscles and motor nerves retain their irritability much longer than when death is produced by bleeding, compression of the heart, or asphyxia. This is especially marked in the case of chloral. The author considers the cause of this phenomenon to consist, not in any action of the anæsthetics on the spinal cord, but in a direct modification of the nerves and muscles by them through the blood, similar to that which occurs in poisoning by carbonic oxide.—*Med. and Surg. Rep.*

Croton-Chloral in Facial Neuralgia.—DR. F. B. LEE reports the case of a lady, æt. 32, who had suffered for years from attacks of facial neuralgia, had several teeth extracted, had been blistered behind the ears, and had tried numerous other means without avail. He prescribed croton-chloral in three-grain doses every four hours. After the third dose perfect ease was experienced, and although three months had elapsed, there had been no return of the disease.—*The British Med. Journ.*

How to Deprive Iodine of its Stain.—Add a few drops of carbolic acid to the tincture, and it will not stain; moreover the tincture is more efficacious, and its action more certain. M. Boggs recommends the following formula for use in injections: Alcoholic tincture iodine, 3 grammes; carbolic acid, 6 drops; glycerine, 30 grammes; distilled water, 150 grammes.—*Ex.*

Salicylic Acid and its Compounds Compared with other Antiseptics.—According to the results of some comparative experiments which Mr. Lapper has done, the value of salicylic acid in arresting putrefaction is not so high as some other substances which are in use for the same purpose. He obtained some fresh bullock's blood, had it defibrinated, and then mixed it with a one-thousandth part of its weight of various so-called preservative substances; one series of experiments was then conducted at a temperature of 100° F., that of living blood, and the other at the ordinary temperature at which experiments are usually made. Though the amount of the antiseptic employed was small, it was very much larger than is administered in disease, and Mr. Lapper holds the opinion that the usual quantity prescribed is very far from being sufficient to act with special antiseptic force upon such a large mass as the living blood. Salicylic acid in the proportion used was found to have but slight effect in preventing putrefaction. The synthetital acid, or that obtained by Kolbe's process, was slightly superior to the acid from oil of wintergreen. The salicylate of potassium seemed to prevent putrefaction to the same extent as the acid itself. The zinc salt aad an equal potency at blood heat, but a greater at an ordinary temperature. With the zinc sulphosalicytate it was the reverse, its efficacy being greater at a higher than at a lower temperature. Carbolic acid at the ordinary temperature stood pre-eminent, while at the higher it was inferior in arresting putrefaction to both sulpho-carbolate of zinc and sulphate of quinia. The bisulphite of sodium seemed to hasten putrefaction at 100° F., while at the ordinary temperature it had no effect whatever. Benzoic acid at 100°F. had the same potency as carbolic acid, but at the ordinary temperature it was inferior.—*Dublin Journ. of Med. Science.*—*Med. Record.*

Nelaton's Method of Resuscitation from Chloroform Narcosis.—Dr. J. Marion Sims most impressively details his observations respecting the practical workings of the above method. Briefly stated it consists of in reversing the body of the patient, either by hanging him up by the feet or laying him over a bed or table, so that the blood from the greater part of the body can gravitate towards the head. The tongue is drawn forward by a tenaculum and artificial respiration tried. This practice is based upon the theory that death from chloroform takes place from cerebral anæmia.—*Physician's Monitor.*

Death from Ten Grains of Chloral.—Dr. E. E. F. Ingalls, *Chicago Medical Journal and Examiner,* reports: "A German woman, about thirty-three years of age, apparently healthy, came into the office to have some teeth extracted. She desired some medicine to prevent the pain, and the doctor gave her ten grains of hydrate of chloral, which dose he repeated in one hour. Soon after the second dose the patient manifested alarming symptom of poisoning, and although all was done that could be to resuscitate her, she died in about fifteen minutes. No post mortem examination was made. The patient had taken only two doses of chloral, of ten grains each—the second having been given one hour after the first.—*Ohio Medical Recorder.*

Medical Examinations in Scotland.—"At the opening of the medical session of Glasgow Uuniversity, last month, Prof. McCall Anderson said few could doubt that a preliminary examination of candidates for admission to the classes was called for, but if proof were required it might be found in the answers given to the following questions submitted to candidates by one of the examining boards: 'What is meant by the antiquity of man?' Answer: 'The wickedness of man.' 'The letters of Junius?' 'Letters written in the month of June.' 'The Crusades?' 'A war against the Roman Catholics during the last century.' 'The first meridian?' 'The first hour of the day.' 'To speak ironically?' 'To speak about iron.' 'A Gordian knot?' 'The arms of the Gordon family.' 'The Star Chamber?' 'Place for viewing the stars.' 'To sit on the woolsack?' 'To be seated on a sack of wool.' 'A solecism?' 'A book on the sun.' 'The year of jubilee?' 'Leap year.' They could, the Professor added, have appreciated this last answer all the more heartily had it emanated from one of the female medical students. It is however, only just on women to admit that they are, as a rule, serious in their studies, and are not in the habit of joking examiners. There is, indeed an earnestness of purpose in their efforts to compete with man which entitles them to respect, and even imitation."—*Pall Mall Gazette.*

Chlorate of Potash and Mercurials.—I notice Dr. J. L. Morrow, of Pittsburg, Pa., asks for information with reference to the use of chlorate of potash with mercurials. Twenty years ago I noticed that bicarbonate of soda combined with calomel and other mercurials prevented salivation; also in a severe case of salivation, if the soda was freely given it quickly cured it. If in a given case I desired to slightly touch the "gams," as we used to call it, as soon as accomplished, I gave soda freely, and three or four days would suffice so remove all trace of mercurial odor.

In after years when chlorate of potash came into general use, my experience satisfied me that it was equally as efficacious as the soda in preventing salivation and also in curing it.

I have been practicing medicine over thirty years, and am now and have been using mercurials as freely as when I commenced, and have never had a severe case of salivation since combining soda or chlorate of potash with them.

It would appear that the alkali and mercurials were incompatible, but facts in medicine are stubborn things.

—*Med. and Surg. Reporter.* C. V. Moore, M. D.

Mode of Administering Chloroform.—In the *Medical Times*, a correspondent who writes from London recommends the following simple form of anæsthetic apparatus:

A pleasant, safe and economical method of administering it will be found in placing a handkerchief in an ordinary tumbler, and then dropping some chloroform upon the handkerchief—the tumbler after this being held to the nose. The advantages of such a plan are these: The tumbler cannot be so applied as to entirely exclude an admixture of air along each side of the nose. Then but a small quantity of chloroform is used, for as soon as each pain is over, the tumbler can be placed bottom upwards on a plate, and the loss by evaporation reduced to a minimum. So slowly does the evaporation take place that the medical attendant can add the chloroform required at intervals himself, and so be sure of the quantity. Further, in emergencies the patient may administer the chloroform herself, the glass falling from the hand as soon as unconsciousness creeps over her. In this respect this plan is much superior to the old one of giving the anæsthetic on the handkerchief alone, which often kept its place after the hand had lost all command over it. As a means of administering chloroform in ordinary cases, the practitioner will find this plan to possess great advantages, and to secure the patient very safely against danger, as well as to be most convenient and economical. Where it is necessary to intrust the administration to a nurse while the medical attendant is engaged otherwise, by this means all risk is avoided, and occasional supervision is all that is necessary.—*Druggists' Cir.*

How to Cure "A Cold in the Head."—Dr. David Ferrier, Assistant Physician King's College Hospital (London,) recommends the use of a snuff composed as follows: Hydrochlorate of morphine, two grains; acacia powder, two drachms; trisnitrate of bismuth, six drachms. Of this powder, one quarter to one-half may be taken as snuff in the course of twenty-four hours. The inhalations ought to be commenced as soon as the symptoms of coryza begin to show themselves, and should be used frequently at first, so as to keep the interior of the nostrils constantly well coated. Bismuth alone answers a very good purpose; but the acacia is added to give greater bulk to the powder, and to make it sufficiently light to be easily snuffed. The morphia is added in cases where it is advisable to strengthen the sedative effect. Dr. Ferrier speaks of it almost as a specific, and as being capable of aborting the cold in a few hours. Our friend Dr. Prout, of Brooklyn, must now look to his laurels.—*Med. Record.*

Death from Self-administration of Chloroform.—Dr. Gustav Judell, privat-docent and chemical assistant in Professor Leube's clinic at Erlangen, was on October 26 found dead in his bed. He had been accustomed to take chloroform at night as a remedy for sleeplessness, by which he was much troubled; and a bottle containing the anæsthetic was found near him. It appears that vomiting was excited by the chloroform, but that he was too deeply narcotized to eject the contents of the stomach, so that portions of the food remained in the œsophagus, and caused death by suffocation.—*Brit. Med. Journal.*

An Antidote to Chloroform.—DR. SCHULLER has discovered that the nitrate of amyl quickly removes the effects of chloroform on the vessels of the pia mater, and that even in cases of advanced narcotism from the latter drug, it rapidly relieves the dyspnœa and labored respiration, restoring the strength of the pulse and the reflex excitability. This discovery may prove of much practical value, where chloroform continues to be the favorite anæsthetic.—*Ex.*

Method of Preventing Cloudiness on Exploring Mirrors.—M. Sanudes, a medical student, communicates to *L' Union Medicale* (Sept. 13) a new process of preventing the laryngeal mirror from becoming obscure. This consists of passing lightly over the mirror a cloth steeped in glycerine. The watery vapour contained in the expired air is dissolved completely in the glycerine and the cloud does not form. He proposes the extension of all glass and optical instruments liable to become obscured by cloudiness.—*Med. Record.*

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ARTICLE I.

The Principles Involved in the Treatment of Diseased Conditions.

BY F. PEABODY, M. D.

Read before the Kentucky State Dental Association.

The field this subject covers is so vast it will be impossible, in a paper as short as this will be, to do more than touch on some of the principal parts. I do not expect to bring anything new before the association, and this paper is written rather for the purpose of gaining information from those who I trust will discuss it, than with the idea that it will impart knowledge to any member of this body.

It is much to be regretted that so little is known of dental pathology by the profession at large; and with from twenty to fifty or more members of the profession in almost every city, there can be found few, who have sufficient knowledge of this subject to take under their care and successfully treat any of the diseases common to the oral cavity, save those of the more ordinary character, which come under their observation every day. It is true that the community has not been taught to go to the dentist, in any trouble that cannot be traced directly to the teeth themselves; but it is the fault of the dentist, who has not prepared himself to undertake much more than the mechanical part, of what is termed operative dentistry, that this is so. When we, as a profession, have qualified ourselves, so that we can meet the general practitioner of medicine, or specialist in any of the branches of medicine, in an intelligent and scientific consultation in regard to disease, perhaps this may be changed.

The principles involved in the treatment of diseased conditions, rest on the four pillars on which the science of medicine is reared; without a knowledge of these we are powerless to treat diseases intelligently. What is required then is, first, an intimate acquaintance with the organization of man, his anatomy, which teaches us how he is made and put together, the uses of the various parts as well as their names, and their relations to other parts. Next a knowledge of physiology from which we learn the proper functions of the anatomical parts in life, their action and influence on each other part and on the whole. Then comes pathology, which is perverted physiology, or the natural actions or functions turned in a wrong or diseased direction. Lastly we have materia medica, with which to correct the pathological conditions, to restore abnormal to normal functions, to relieve pain and give comfort and ease. Therapeutics which might be added to these though properly a branch of science of medicine, which treats of the application of remedies, is in reality the grand application of the knowledge gained in all these directions. Having an acquaintance with these principles, we can act understandingly; without them, all efforts must be experimental and success accidental.

That which constitutes the cardinal principles of general medicine, constitutes also the principles of each of its specialties. No specialty of medicine, whether that of the dental surgeon, oculist, aurist, or any other, can be practiced in the most intelligent and thorough manner without an intimate knowledge of the whole of géneral principles. In dentistry, perhaps, it is not so essential to have a thorough knowledge of materia medica as in some of the other specialties; yet we frequently meet with cases where the first step towards the removal of local disease requires systemic treatment. We must have a knowledge of principles before we can apply remedies understandingly.

We cannot treat a disease until we recognize it, and having made a correct diagnosis, we must know its character what its usual course is, what it will result in if left to itself and what remedies will reach and correct it. In order to cure a disease we must strike to the bottom of it, and thoroughly eradicate from the system all trace of it. But while we are doing this, we must not forget that one of the best principles of treatment is based on the power of nature to restore itself; or that over-treatment often results in as much or more harm than under treatment. As the cause of disease is irritation, our first step should be to remove this, that is the first effort of nature; in order to do this she immediately establishes a condition of inflammation. Often she is incapable of succeeding in this unaided; then the skill of the physician demanded. Having removed the cause, nature will take care of the result, for any system that has sufficient power to set up, and sufficient vitality to keep up a vigorous state of inflammation, in order to remove an irritation, has a corresponding power to restore itself when the conditions are changed, from abnormal to normal. Throughout the system there is constantly going on a process of waste and supply; and where there is a natural action, nature will bring to the parts requiring it, a sufficient amount of building material to restore them to health, if it is not beyond her power.

Let us look for a moment at the efforts of nature to remore an obstruction which is causing irritation. Did you ever put an obstruction over the opening to an ant hill? or see a hill of small red ants attacked by a large black one?

What is the result? The sentinel on duty immediately sounds an alarm, a file of soldiers is sent out to remove the obstruction; if within their power they do it, and all goes on in the natural channels as before. It is the big black ant that attacks the strong-hold, the file of soldiers bravely attack the enemy; they are not able to cope with him, re-inforcements are sent for; he destroys many, undismayed they renew the attack, they swarm over the intruder, they surround him, on all sides they annoy him, they come bravely to the scene only to have their ranks depleted; they fall by scores only to have their places taken by others; they continue the attack until the ground covered by their dead and wounded is so heaped up that their own soldiers in turn become an obstruction, and the attack can no longer be carried on with any hope of success. Now bring your hand to the rescue; remove the enemy, clear away the slain; the coast clear, the remainder of the garrison go at once to work to restore the destroyed structure, grain by grain they replace the sand their house is built of, little by little, but slowly and steadily the work goes on; let them alone and in a short time the task is completed, and the edifice looks as full and perfect in its reconstruction as before it was invaded.

Take now (to apply this illustration) a necrosis of a portion of the superior maxillary. I speak of that because from its exposed position it is more subject to injury which may cause necrosis, and because its treatment pertains more directly to our profession. The maxillaries have a greater degree of vitality than most of the bones, and consequently greater power to resist disease, and greater capability for re-production, where a portion is lost from disease or otherwise. A part becomes necrosed, dead—that part is an irritant, it is an unnatural condition, the system immediately sends extra blood to the part to set up an inflammation to remove it. If the necrosed part becomes exfoliated, nature will succeed in casting it off, as it would a splinter from the hand. If it is not detached from the vital portion, more blood is sent, more inflammation is set up, regiment after regiment, squadron after squadran of corpuscles are sent to aid in expelling this extraneous object, which from, its change from a vital to a devitalized condition, has become a foreign intruder which stops up the channels and interferes with the natural course of the blood. Regiment after regiment and squadron after squadron fall in their efforts, they are powerless, nature converts her cohorts of blood-corpuscles into pus-corpuslce, they undermine, they sap, they dissolve the surrounding tissues, they use all their efforts to hurl the enemy out. They fail, capillaries cease to perform their functions, they are filled with the dead and dying soldiers sent to the attack, a condition of sluggish action goes on and comparative stasis is the consequence. Then comes surgery, it comes with its instruments and removes the dead bone from the living, clears away all the debris of battle, depletes the engorged capillaries, opens the channels for the continuance of the natural flow, stimulates the absorbents to carry off what is not useful, what has been destroyed in removing the dead bone, and encourages the depleted capillaries to renewed exertion. The enemy is gone, the work of restoration must commence. Little by little the building material is brought. It is taken up and each atom is placed where it belongs, a call is built here, another there, they reproduce, they grow, they increase, and in a short time all is completed, and, if the ravages of the diseases have not been too great, the parts are restored, as far as possible, to their normal condition. I say as far as possible, for I doubt if any reconstruction ever equals the original. Nature is always at work restoring the waste and loss which are continual; we wish merely to aid her and give her a chance; she always does her work well; she wants some assistance at times, but she must not be killed by mistaken kindness.

The successful treatment of diseased conditions then, lies in a knowledge of the organization, a correct diagnosis of the disease and an intelligent and judicious administration and application of therapeutic agents, or the skillful use of surgical instruments, as the case may require. But aside from this knowledge many other things have to be taken into consideration; the general surroundings, the temperament, the question whether the disease is local or general, and if local whether it may not depend on some systemic cause, which must be removed before local treatment will be of any benefit; the condition of the blood, the habits of the patients, etc. Thus for instance, if we know, or learn upon inquiry that our patient has a hemorrhagic diathesis, we should be the better prepared to arrest any undue flow of blood in any operation that would cause bleeding. Locality, surroundings, and special conditions must be considered; results under one set of circumstances, or in one atmosphere, may not be repeated in another, any more than a successful operation in one mouth or in one tooth will necessarily be successful in all and a change in the form of disease demands a change of treatment. We know that gold, when properly used, will generally protect a tooth attacked by black or brown decay; while in teeth that are subject to white decay, tin, or some other filling is of a much more saving character, this is but a single example, and what you can count on with almost certainty in one case, may be of no advantage in another.

We, as profession, have to deal more directly with the mouth and teeth, yet so intimately connected are the different organs, and so sympathetic with each other, that we frequently find troubles of the eye or ear entirely relieved by operations on the teeth. I have known instances where partial loss of sight has been restored by the removal of diseased teeth, and instances can be related by almost any dentist who has had any amount of practice, where deafness either total or partial, has been cured by the removal of diseased teeth.

Our knowledge of the course of disease is exceeedingly limited, and a knowledge of etiology must necessarily be dependent on what information we may possess of pathology just as that science is dependent on a knowledge of pathology. Perhaps less is known of the pathology of the mouth than of any other portion of the system ; we know that the teeth decay, we know that the decays we find are of different characters, produced undoubtedly by different causes, but we have no positive knowledge of what causes these decays. We are often asked by our patients, " what makes the teeth decay?" How shall we answer them? I suppose generally the patient is informed that decay is caused by acids, and that these acids are produced by decomposition of food left between the teeth, or from the eructation of an acid stomach, or from acids taken into the mouth, and this is perhaps as good a general answer as can be given. Acids undoubtedly aid decay, and in some instances may be the cause of it, but unquestionable other causes are at work to produce the destruction of enamel and dentine, as we see it in the round holes in the crowns of the molars, irregularly shaped cavities in approximal surfaces, and elongated ones on the buccal portions of the necks of the teeth.

The human system in its full health and vigor is often capable of throwing off disease, the power of its vital force and energy is sufficient to prevent disease from obtaining a foothold : while under certain conditions of a perfectly physiological character, one portion may be so weakened (the greater force being called elsewhere) that it is not capable of resisting the insidious advances of disease.

Sometime ago I had for a patient, a young lady just married ; her teeth were well organized and she kept them cleansed with scrupulous care, I found it necessary to introduce some ten or twelve fillings to put her teeth in thorough order. Having given her minute instruction in regard to the care of her teeth, I spoke to her husband as to the proper diet, and explained to him the drain made by the system on the teeth in forming the osseous structure of the child, where the material was not found in sufficient quantities in the food. I requested the lady to let me see her in one year. It was eighteen months before I saw her again, in the mean time their union had been blessed with a child. I found in her mouth ten or twelve cavities which had not existed when I saw her before; on questioning her she acknowledged that she had paid much attention to the instructions I had given her husband.

It is said that a portion of the bone from the teeth, or rather that portion of bone making material, which should have gone to the teeth for their proper support, is to a certain extent taken to supply the ossifice wants of the embryonic child, and that the whole structure of the tooth in its impoverished condition is more susceptible of decay, or less power to resist its encroachment in places favorable to this attack. How far this theory may be carried I am not prepared to say, my own opinion is that vitiated and changed secretions have quite as much to do with the decay of the teeth, under such circumstances, as any want of bone making material in the system. Be that as it may, and accepting the proposition as true, a knowledge of the requirements and course of nature under such circumstances must certainly be of great advantage and suggests the correctness of prophylactic treatment, which if it will accomplish the purposes, is certainly much better than remedial.

Experience often teaches us the best means with which to treat diseased conditions, and it is of more value as we know, than information gained from books.

Life is too short, and the amount of knowledge to be acquired too great, for us to learn all that is necessary from our own observation, we have to accept much from the observation and experience of others, and particularly that which is generally accepted. In the treatment of diseases we frequently have to give remedies empirically, and in fact all medicines must have been used in that way at first, at least to some extent. We cannot in the treatment of new diseases, or in the administration of new remedies, go to work as in a problem in mathematics, and figure out with exactness what the results will be; therefore we must give remedies according to the best of our judgment, and watch and record the result. Having obtained that, we can then reason on their mode of action. Valuable remedies even to this day are given because they produce desired results, yet how these results are produced is not well understood. Experience then, teaches us how to use remedies, and from it we learn, that results reached in one instance (circumstances being the same) may reasonably be expected in another. While we sometimes have to use remedies, the action of which we cannot precisely explain, we often have to treat diseases the cause of which is hidden. We know in a painful tooth, where there is an exposed or congested pulp, if the pulp be pricked and a drop of blood taken from it, relief from the pain is often afforded. Why? Because the blood vessels in their congested condition are gorged, and in their enlargement consequent on that engorgement, pressure is caused on the nerve, it is irritated; the vessels being depleted by the removal of a drop of blood the nerve is relieved of its pressure, and the irritation is gone. If we fill a tooth over an exposed or nearly exposed pulp, where the metal comes in contact with the pulp or thin stratum of bone over it, causing pressure, and some time after there is pain, or if a tooth be filled over a dead pulp, and there is pain, we know that by drilling into the root until the canal is reached we at once give relief Why? Because the pulp either dead or dying is in a state of decomposition, and in decomposing generates gas; that gas swells, trying to find an outlet; it causes pressure, therefore pain; if it were allowed to remain it would find an outlet through the alveolus, and establish an abscess; when we make an artificial opening the gas escapes, the pressure is removed and with it the pain. These are things we know, we know them from observation and experience, and from the teachings of others; they are matters that we can demonstrate. But who can give the cause of erosion of the teeth, a marked specimen of which I have with me; who can state positively what is the cause of what is known as tooth edgedness; can tell whether it be from a low state of circulation in the enamel, or from porosity, which admits of fluids being imbibed, or from some other cause? Who can explain the cause of the absorption of the roots of the permanent teeth, or the formation of secondary dentine in the pulp, or who knows the cause of the wasting of the sockets of the teeth, and the consequent loosening of the teeth causing them to become useless in an otherwise apparently healthy condition? Theories of all sorts are advanced to explain these pathological conditions, many of which must be taken "Cum grano salis." We do not know the cause of these troubles, consequently we cannot treat them as we could wish.

I have a patient in good health; the first and second molars on the inferior left side became loosened; the gums were apparently healthy; they became so annoying I had to remove them. The teeth were not decayed, the pulps were alive, and there was no absorption at the ends of the roots, the edges of the alveoli and septum were vital as far as I could distinguish. The same teeth on the right side are going in the same way. I have been treating them for two months in every way that I have been able to think of as likely to benefit them. I have stimulated the gums, explored the roots almost to their apexes, removed all traces of foreigh accumulation, bathed them in elix. vit. to remove any thing that I might have overlooked, or to dissolve any dead portion of the alveolar process. I have done them no good. I did not expect to when I commenced. My patient will ultimately lose them, though she may keep them for years in their present condition; they cause her no pain and give her no uneasiness excepting becoming occasionally sore. I think she will lose all her teeth in the same way, they show indications of loosening; she keeps them perfectly clean, but in this case it is probably constitutional.

Of all the diseases that present themselves frequently for our treatment, perhaps there is none so common or so perplexing as that of recession of the gums, the loosening of the teeth, and the oozing of pus from around the necks of the teeth. I do not speak of those cases of inflammation and recession of the gums, which are evidently dependent on the encroachment of foreign substances, such as sailvary calculus; these are more generally confined to the neighborhood of the mouths of the salivary ducts, including the lower front teeth and the superior molars. These cases are easily cured by removing the calculus, and if necessary stimulating the gums. But I allude to those cases where on one or more sides a broach can be introduced between the gum and tooth, sometimes entirely to the apex of the root, where there is no adhesion between the gum and root, and where the process and septum are to some extent absent These cases are dependent, if not for their origin at least for their continuance on some other cause than the deposit of calculus. Now what is the cause? It has been the study of some of the more observant for years, and yet little is known as to what occasions this disease, or what is the best and most successful method of treatment. Is it owing to a stasis of circulation from whatever cause, which occasions the breaking down and absorption of the edges of the septum and process; to some chemical action, to some foreign substance entering under the free margin of the gum and keeping up a constant irritation; to the action of mercury or some other medicine; to some abnormal growth; some animalcule; or to some constitutional defect? My own experience has been in most cases, that there is a necrosis of the edge of the alveolus. Dr. Riggs, of Hartford, has given us more light on this subject than any other member of the profession, and I have understood that he succeeds in curing a large percentage of the cases that come under his care, and I also heard a prominent member of the profession say he "would about as soon die as go through his hands"—his treatment is so severe.

A few months ago I had an interesting case of this character. The patient was a young lady who prized her teeth above every thing else; the tooth, a beautiful lateral incisor, stood somewhat apart from the central, and pressed closely against the canine; it was without blemish; it was not much loosened but there was the dark blue line at the edge of the gum which indicates trouble beneath. I found the alveolus, between the central and lateral dead for some distance up the root. I cut it away as well as I could at the first sitting, and in a day or two the dark line had disappeared and the gums had assumed a more normal appearance; but the trouble was not exterminated for I could still detect necrosed bone. I saw the patient twice a week, and each time I cut away more bone which I had neglected to remove the previous sitting, until I had traced the necrosis some distance under the central incisor. I finally succeeded in removing it all, at least I could detect no more, and granulation commenced satisfactorily. Now the question arises, have I succeeded in curing the case? and if so is the cure permanent? If the cause of the disease was the dead edges of the alveolus, and if I have succeeded in removing it all, undoubtedly the lost bone will be restored and no more trouble will arise, unless from a new attack of what caused the trouble before. Up to the present time it is doing well, some tenderness but no inflammation or oozing of pus. I believe she will have no further difficulty; but what caused the disease? No other tooth was in any way affected, and there was no indication of the trouble at any point on the gums, save the tooth that I treated. Had not the young lady possessed a courage almost spartan in its character, she could not, and would not have submitted to the operation, for it was exceedingly painful; few would have been willing to endure it, and on that account I do not consider it practicable. Aromatic Sulphuric Acid, it is stated, will dissolve the dead bone and destroy abnormal action without injury to living tissue. I have never succeeded in curing an aggravated case of this by this means, though some cases have been greatly benefited by an application of it.

I could give other cases and bring forward many other problems for solution, which would be of undoubted interest, but this paper has already exceeded the limits intended. On closing I would only say we cannot over-estimate the importance of careful study, close observation, noting the result of our experience and comparing it with that of other, that thus we may acquire the means of combating diseased conditions, but this skin is not to be gained in a day. Nor can any degree of perfection be arrived at without labor. As the microscopic cell, by multiplication and enlargement forms the several parts of the human body ; and these, by their harmony and solidarity, form the structure of man, so do the atoms of knowledge which we gather here and there by observation and experience, and store away in the recesses of the brain, each a power in itself yet dependent on every other, and strengthened by every additional atom, unite to form that living body of science which is the source of all our art. From it as from a fountain flows that light which guides us in our efforts to contend with disease and to turn pathological into physiological conditions.—*Dental Register.*

ARTICLE II.

Dr. Chase and his Theories.

BY J. CAMPBELL.

The dental profession should certainly feel itself under obligations to Dr. Chase for the persistency with which he has pursued the investigation of Oral Electricity, and the elaborate manner in which he has treated the subject, both in the June number of the *Dental Journal* for 1876, as well as in his article in its issue of last month. In saying this much, however, I do not wish to be understood as claiming that the dental profession should adopt his theories so far as they lead to a radical change in the material for filling teeth. I simply desire to recognize in Dr. Chase's course an example of intelligent scientific research, which it would be well for the profession to imitate.

His conclusions may be wrong, in fact it would seem that the weight of evidence is against him, if the experience of half a century is worth anything; but this I hold does not detract from the credit we should accord him for his indefatigable labor and patient searching after truth.

It will be a difficult matter to refute the conclusions reached by Dr. Chase, providing we admit that the same laws lead to the disintegration of animate substances that operate in the dissolution of the inanimate.

But we have no means of ascertaining that such is the case, but on the contrary we have reasonable grounds for concluding that such is not the case. In the absence of experiments having all conditions alike, being possible, this however must remain a matter of partial conjecture.

Were it possible to determine with the accuracy of analysis what medicines would correct a derangement of the living tissue, then medicine would no longer be an art, but a science, whose claims would rest on the same foundation with that of chemistry or mathematics.

But science can go no farther than to take cognizance of physical principles minus the highest of all principles—LIFE.

In concluding an analysis, with the view of applying such results as may be reached to the healing art, we cannot say that the analysis has given us positive grounds for proceeding.

We may determine what monads are, what proximate principles are, what tissue is; but we cannot determine what an organ is, any further than to know that it performs certain functions. We may analyze their material elements, that is, separate them, but we cannot put them together so as to make an organ.

In the progress of the healing art it cannot be said that everything is due to analysis, or the application of scientific principles. The knowledge of the destructive properties of many poisons was obtained by experiments made on the living tissue. On dead tissue many of them are wonderfully potent as conservators, and hence if analogy were followed would be also conservators of living tissue. But on living tissue they are just the reverse. It may be stated here that medicine for the most part is dependent on empyrical knowledge rather than on scientific knowledge, that is the physician does not conclude that because this or that substance is composed of certain chemical elements, it therefore must necessarily produce certain results on the living organism; but he determines the potency of his medicine by the absolute result that it *does* produce. If you ask him to account for such results scientifically he will answer that he cannot. Scientific experiments that are made with the view of applying them to the healing art are defective in this, that the chief factor, vital force, is left out.

What reliability we can place on an experiment where the chief factor is missing, I will leave the scientific world to determine.

The experiments made by Dr. Chase, and the results reached, lead to the overthrow of our heretofore practiced mode of preserving teeth. This would be no great loss to us were we certain that Dr. Chase is right, and that we have been wrong for the whole period of our lives. It is to be hoped that the dental profession is not so wedded to a single mode of practice that proof of its being defective would fail to bring about a modification.

I now propose to examine briefly the nature of the evidence on which we are required to surrender our present mode of practice, together with the nature and amount of evidence which would permit us to retain it.

The indicative point in favor of a departure is a purely scientific one, and is chiefly based on a class of experiments made by Dr. Chase, showing the galvanic action of metals in the mouth, and their comparative destructive tendency, on the teeth. He tells us that a plug in a tooth, immersed in the fluids of the mouth, is at once a battery ready for action. Gold being the farthest removed from dentos, on the electro-negative scale, "there would be a stronger current than between any other two substances; consequently the dentos would be broken down or dissolved more rapidly than if it would be united to tin, amalgam, or any other material in the list." This result Dr. Chase arrived at after having made repeated tests, and is therefore satisfied to base his practice on it. Now, we are free to confess that, did we lack all the experience in the results of filling teeth, this purely scientific test would have considerable weight with us, even made, as it was, out of the mouth. We might be inclined to pass over the fact that the fluids of the mouth are not always acid, and therefore unable to act as a disintegrative agent, or even when they are acid, and the battery at work, that the work must be done on living tissue, and not on dead bone, as was the case in the experiment. The conclusions reached from this class of evidence would be similar to those reached if we were to saturate a piece of lean meat or muscle with arsenic. We would observe at once that the arsenic preserved the meat from disintegration, and therefore we might conclude that it would also preserve the living tissue from disintegration.

We might be led to forget, in our eagerness to arrive at a conclusion, that we left out of consideration the greatest factor of all, the vital force.

Our experiment, therefore, the moment we put it into practice would fall to the ground. The arsenic, in place of preserving the living tissue, as it did the dead tissue, would destroy it. Our experiment would be worth less as furnishing us a criterion to guide us in determining the effect of arsenic on the living organism, and we would be forced, if we pursued the investigation of the subject, to conclude that arsenic will kill the living, notwithstanding its power of preserving the dead tissue But the arsenic furnishes us with no single exception of what I will call an anomaly in science—and yet it is not an anomaly because the conditions are dissimilar. I might embrace many other articles found in the materia medica of our country, which, were we to follow the indications manifested in a scientific experiment, we would either poison or seriously injure one half the people of the country. My purpose is not so much to elaborate as to show at once that the healing art relies, not so much on purely scientific experiments from which deductions must be drawn, as it does on absolute experiments with the living subject. The character of testimony is by far the most reliable from a medical stand-point, in fact is the only one on which any implicit reliance can be placed.

The question then with us resolves itself into one of absolute results, obtained from a long course of practice—not of results obtained from one man, but from that of hundreds. The weight of this evidence must be placed over against that of the purely scientific experimentalist. If it favor him, so much the stronger will his position be made. If it is against him, then his position will be weakened in proportion to the amount and character of the testimony.

It will be safe to say here that there is not over one first-class operator in fifty, in this country, who has not obtained better results from the use of gold in the mouth than from any other material.

This is their testimony. This is the testimony of two or three generations of dentists. I am not supposing now that any self-interest has given solidity to this concurrent opinion, or that an ignorant prejudice has prevented the majority of our intelligent dentists giving the other materials for filling teeth a fair trial. I am aware that some have testified against the use of amalgam, and when pushed to the wall acknowledge that they never used it. Their testimony is worthless. They belong to a class of men with open mouths and closed heads, whose opinions it would be well to ignore under ordinary circumstances. I count their testimony, or condemnation, as utterly outside the pale of recognition.

But I mean to assert that forty nine out of fifty of our fair-minded men, who are not afraid to go out in search of an opinion of their own, have found more satisfactory results from gold fillings than from amalgam, or any other of the compounds or materials used. This preponderance of testimony—overwhelming in amount and character—

must be placed over against the deductions made from the scientific experiments of Dr. Chase. In this particular Dr. Chase occupies a position similar to the man who, after having made his experiments with arsenic on dead tissue, would insist that it was not destructive to living tissue, while his declarations were made in the face of the protests of forty-nine out of fifty of the medical faculty. He might contend that they could advance no scientific argument against the deathly nature of the arsenic, but on the contrary he could show from analysis that arsenic was not poisonous, or at least that it ought not to be poisonous. In this particular he might gain a seeming advantage in the argument, while his opponents would be compelled to fall back on their experience in lieu of his scientific deductions.

But if forty-nine out of every fifty of the best men in the medical profession would testify that arsenic would kill, that they tried it, and knew from experience, that there could be no mistaking its character in this direction, although being unable to explain why it did kill, we would, in all probability, act on their advice and refrain from swallowing it

Between what, seemingly to the scientific man, ought to be, and what really is, there is very often irreconcilable difficulties. This arises from the fact I have already stated, that the scientist's experiments embrace as factors the physical forces, but do not embrace the vital forces.

His conclusions, therefore, may be partially, or totally defective. They need confirmation by absolute tests on the living organism. Without this we can only regard them in the light of possibilities.

The logic of Dr. Chase's article points in one single direction, and that is, that the electric current is mainly, if not altogether, accountable for the breaking down of a tooth after it is filled. This inference is based, as I have already shown, on a series of experiments conducted with conditions dissimilar to those that must necessarily exist in the mouth. It would be asking too much of the profession to rely with equal faith on the correctness of such views, particularly where it would lead to the total overthrow of a system of practice that has formed the foundation stone of dentistry. We can readily see how the purely scientific experimentalist can sneer at such reasoning as those who rely on experience can advance. But I take the liberty of again reminding such that the great art of medicine relies more on the absolute effects produced than on speculative deductions.

REMARKS BY THE EDITOR, (DR. CHASE.)

I grant that gold has, during the *past*, been superior to all other known substances for the general filling of teeth. Tin was too soft for masticating purposes.

The amalgams of the past were restless—always changing shape—and contracted so as to allow of leakage. *A great change has taken place.* Alloys have been on the market for two or three years, which, poor as most of them are, will better preserve teeth from decay, as a general rule, than the *average* of gold plugs. The best of them *do not* leak. The majority of gold plugs *do leak.*

For myself, since last September I have made an alloy consisting of gold, 20 to 33 per cent.; tin, 40 to 50 per cent.; and silver, 20 to 40 per cent., according to definite, exact, and uniform formulæ. These formulæ I have freely given to the profession.

These gold alloys *do not* leak. They discolor not at all, or very little, in the mouth. In a *large majority of mouths*, not at all. Their plasticity enables one to easily make a water-tight plug in any cavity. It is reasonable to suppose that such an alloy is a thousand times more useful than any alloy previous to three years ago. And even these poor alloys preserved teeth many years that gold foil had condemned to extraction.—*Missouri Dent. Jour.*

ARTICLE III.

Principles Involved in Filling Teeth with Gold Foil.

BY S. B. PALMER, M. D. S.

Read before the fifth District Dental Society of the State of New York, April 24th, 1877.

The late History of Dentistry shows, that filling teeth with gold has furnished a fruitful topic for discussion from the earliest use of the metal for that purpose, down to the present time.

The earnestness displayed in discussion and the various preparations of gold recommended, show most conclusively that we are from the millennium of a uniform practice. The filling of a tooth involves known principles in nature, which, in all cases, determines the result of the operation. Failing to recognize such a law, time, reputation and teeth are sacrificed; and ever will be, until these principles are complied with. This lack of knowledge is very natural. Dentistry, but a few years since, was only a mechanical employment; its advance to a profession is mainly the result of observation, and experiment. By this means, rather than from scientific investigation, is dentistry indebted for the facts and knowledge that concedes to it the honor of a profession.

Although dentistry claims to be a profession, in the one operation of filling teeth, the parental type or mechanical inheritance is predominant; even some of our best operators say that filling teeth is a "mechanical operation, no chemistry about it, that failures are due to miserable mechanics." If it had been the good fortune of the writer to find the perfect mechanic, and we judge them by their work, this article would not have been written. It is not my purpose to give any one method of operating or preparation of material to be used in the preservation of teeth. There are two considerations in filling a cavity in a tooth. First mechanical, second chemical.

Manipulating the gold, and finishing the plug, is mechanical. We have been told how to do this time and again, and by all conceivable methods, and still every operator has his black list, which he does not care to exhibit. And why? Because the effort was against natural laws, and could not succeed. When the profession come to understand the conflict between the chemical forces, set in action by the presence of gold in contact with dentos, and efficiency of the plug to mechanically check those forces, will there be less failures, because there will be less gold fillings of that class inserted. Having said this much for mechanics, let us consider the true causes of anxiety and disappointment, that dentists so often meet with in practice. In a word they undertake impossibilities.

Without going over the premises occupied by other papers, I will only mention facts, as acknowledged and understood by modern scientists, relative to matter, or in a strict sense, matter with which we have to do in filling teeth with gold. It is true that gold, not in absolute contact with a tooth, worn in the mouth as filling or clasp, sets in action one or more of the correlated forces of nature, to the detriment of the tooth, in a degree, according to the resistance of the tooth. Heat, chemical affinity, and electricity are three of the forces most active in this connection. Moisture is the medium or agent through which this destructive action does its work. Perfect contact of gold and dentos excludes moisture and hence no appreciable decomposition takes place. This fact calls for thoroughnes in removing all softened bone from the cavity, and close adaptation of the gold to the dentos.

That power of force called capillary action which raises the giant forest tree above the surface of the earth, in opposition to gravitation, is a potent agent in causing the destruction of teeth filled with gold. Take a tooth that has been extracted and become dry, place it in water so that a small portion will be immersed, the whole body will soon be dampened by capillary action. Teeth in the mouth are always more or less moist according to their density, the fine scratches left by the burs, and excavators in preparing cavities, are not, and indeed cannot be perfectly filled with ordinary foil, and therefore become filled with the fluids of the mouth, the very thing neccessary to call into action, and conduct the electric current caused by the presence of gold. This may be considered the general cause of enlargement of cavities, and loosening of gold plugs. Perfect fillings will preserve good teeth; nature protests against the use of gold in teeth sufficiently porous to become conductors of the electric current, her laws are imperative, only in their keeping can we expect reward. Much time is wasted in experimenting, and discussing the various methods, and preparations recommended; that there is a vast difference in the skill of operators I am ready to grant. That preparation of gold is the best for the dentist which will enable him to most perfectly fill a cavity; when all is done, gold is gold, and all the thoroughness, and skill at our command cannot change its natural influence upon tooth substance in the mouth. While I deplore the use of the file for separating teeth and admire the beautiful results attained by wedging and contour filling, I am convinced that the advantages gained by the latter course lie in admiration, and not preservation, for the same principal governs the action when a contour filling touches an approximate tooth, as when a clasp is in contact or a filling loose in a cavity, but for the enamel upon the approximate tooth to check the action contour fillings would soon fall into disuse.

The object in presenting this subject, is not to bring general charges against the use of a material which must still be employed for want of better, but to present the principles which will ever determine the result for good or evil. These principles are ours for the finding out, and are as unchangeable as nature. To warrent success, cavities must be prepared with brains as well as by burs and excavators; gold must be packed against the walls of the cavity with good judgement as well as by the mallet. I am convinced that the bruising of the dentos by over packing hard gold upon the surface is one of the causes of many unaccountable failures witnessed. The success of many of the early dentists in the use of gold, lay not in their superior skill, but rather in conformity to laws granting success. The average operator of to-day would be as successful with permanent separations, and non-cohesive gold. In our desire to restore the wasted portions of teeth cohesive gold is used, with which it is at times impossible to do perfect work; and again, instead of the permanent separation, there is often contact with an opposite tooth or filling, failure is only a question of time. It is not my intention to advocate the old practice; I would that all might know the principle by which to be governed, or which will surely govern any operation; then with judgement choose that method which under all circumstances, would give the best results. It has been but a few years since the relation of matter and force has attracted attention in filling teeth; up to this period we had all the facts or effects which had come through patient observation and experiment during the existence of the profession. Given those effects, by the aid of science we go back in search of causes, having found them, we call them principles or laws, so far as they relate to our specialty. They are not numerous or difficult of comprehension, and ere long the dental student will be taught the same as the rudimental principles in the practice of dentistry. Let those doubt who may, science never put her hand to the plow to look back.—*Dental Register.*

ARTICLE IV.

Meetings of the American Dental Convention and other Dental Associations.

The Annual Meeting of the American Dental Convention, and the Dental Association of Maryland and District of Columbia, and a Special Meeting of the Southern Dental

Association, will be held at Deer Park and Oakland, Garret County, Maryland, commencing Tuesday, August 14th, 1877, at 11 A. M., and continuing through the week.

This is to be a united, but not a consolidated meeting of the three Associations, for while it will consist of a series of joint sessions, each body will control its own internal affairs, and each individual will preserve his distinctive membership in his own body, and at his option acquire membership in the others.

The sessions will be held in the Memorial Church in Oakland, and members will have conveyance at suitable hours between the two places.

AMERICAN DENTAL CONVENTION.

President.—W. H. Atkinson, New York.
Vice-President.—J. R. Walker, New Orleans.
Cor. Secretary.—G. A. Mills, Baltimore.
Rec. Secretary.—Ambler Tees, Philadelphia.
Treasurer.—J. G. Ambler, New York.

Executive Committee.—R. B. Winder, Baltimore; H. Townsend, Philadelphia; W. M. Reynolds, New York; G. A. Mills, Baltimore; L. H. Delange, Camden, N. J.

SOUTHERN DENTAL ASSOCIATION.

President.—S. J. Cobb, Nashville, Tenn.
1*st Vice-President.*—A. C. Ford, Atlanta, Ga.
2*nd Vice-President.*—A. F. McLain, New Orleans, La.
3*rd Vice-President.*—J. B. Patrick, Charleston, S. C.
Cor. Secretary.—W. L. Dismuke, Nashville, Tenn.
Rec. Secretary.—E. S. Chisolm, Tuscaloosa, Ala.
Treasurer.—H. A. Lowrance, Athens, Ga.

Executive Committee.—L. D. Carpenter, Atlanta, Ga.; J. G. McAuley, Selma, Ala.; J. G. Angell, New Orleans, La.

DENTAL ASSOCIATION OF MARYLAND AND DISTRICT OF COLUMBIA.

President.—R. Finley Hunt, Washington.
Vice-President.—B. F. Coy, Baltimore.

Cor. Secretary.—R. B. Winder, Baltimore.
Rec. Secretary.—H. C. Thompson, Washington.
Rep. Secretary.—F. F. Drew, Baltimore.
Treasurer.—J. Curtiss Smithe, Washington.
Executive Committee.—T. S. Waters, Baltimore; M. W. Foster, Baltimore; H. B. Noble, Washington.

This united meeting of the three Associations was arranged with the view of bringing together in social and professional intercourse, to as great an extent as possible, members of the profession from all parts of the country, believing that the best interests of all, both individually and collectively would be thereby promoted. Every effort will be made to have this occasion a pleasant one.

We will have the valuable voluntary co-operation of able and learned members of the Medical Profession, papers will be read from eminent members of the three Associations; our clinical operations will be among the best in the profession—a wider range than usual will be given to the mechanical processes, the battery and the spectroscope will be fully and ably treated in their relations to Dentistry, and if possible the effect of anæsthetics on living organisms will be exhibited.

Deer Park and Oakland, six miles apart, are situated on the backbone of the Alleghany Mountains, immediately on the Baltimore and Ohio Rail Road. By an arrangement with that Company members of the Associations and those desiring to become members will purchase at regular rates, tickets to Deer Park or Oakland from the following or intermediate points, viz: Washington, Baltimore, Pittsburg, Wheeling, Sandusky, Monroeville, Auburn, Chicago, Cincinnati, Columbus, Portsmouth, Parkersburg, Staunton, Lynchburg and Danville. Returning they will receive certificates at Deer Park or Oakland which will pass them over the route they came to the points at which they purchased their tickets.

The Ohio and Mississippi Rail Road will sell to duly accredited members round trip tickets as follows: Louisville to Cincinnati, $5.00, St. Louis to Cincinnati, $12.00. It is believed that other lines connecting with the Baltimore and Ohio will make for this occasion large reduction in the rates of travel.

The Hotels at Deer Park and Oakland can accommodate all who may attend, and the rates will be reduced from \$3.50 to \$2.50 per day.

The scenery on this Road is grand beyond description, and the mountain air is cool, pure and bracing.

It is earnestly hoped that every member of the Associations will attend, and a cordial invitation to be present is extended to all other Dentists, to members of the Medical Profession and all others interested in Dental affairs.

ARTICLE V.

The Etiology of Alcoholic Degeneration.

Almost weekly, the exchanges we receive contain reports of cases where the complications brought about by alcoholism add largely to the danger of the patient. The invention of processes of distillation has led to a widespread introduction of distilled liquors where formerly fermented beverages were almost solely consumed. Thus statistics from the cider and wine districts of France and Germany show a growing ,use of beetroot brandy and similar form of spirits.

Some have maintained that the injurious effects of alcoholism arise more from fraudulent mixtures and the addition of poisonous ingredients, such as strychnia, cocculus indicus, aloes, fuchsine, etc., than from alcohol itself. Unwise and not over-scrupulous advocates of the temperance cause have frequently seized upon these alleged adulterations as arguments for their orations; and the tables have been turned upon them by dealers who guarantee "pure and unadulterated liquors only," and by non-temperance writers, who have maintained that such genuine alcoholic beverages are harmless even in considerable quantities. Thus, as is always the case, the men who advocate what is not true in order to do good have hurt their position and the reputation of their side.

In fact, wines and liquors in this country very rarely contain any injurious adulteration. The "manufactured" champagnes, brandies and liquors, so common at the bars of saloons, are made from "high wines" diluted, colored with burned sugar, or other innocuous substance, sweetened and flavored with very small quantities of essential oils. It is safe to say that no strychnine, cocculus indicus, alum, copperas, picric acid, or other deleterious substance, is used at all. All such statements emanate from the inventive brains of unscrupulous temperance orators.

The evidence for the truth of what we have just said is very ample given in the second Annual Report of the Inspector and Assayer of Liquors to the Commonwealth of Massachusetts, Professor James F. Babcock. He presents, in this Report, about four hundred analyses of all varieties of ordinary bar drinks, and did not find among them all any poisonous adulteration whatever. Of course the new whiskies had more or less fusel oil, but this, though deleterious, is no added product. Of this standard American drink he says:

"Many vile epithets, as 'benzine' and 'Jersey lightning' have been bestowed upon whisky, and perhaps deservedly, for new whisky is very different in its qualities from old; and it is to new or raw whisky that these opprobrious titles are applied. Whisky is rarely, if ever, adulterated with any injurious substances. Raw or new whisky owes its harsh flavor and burning taste not to substances intentionally added as adulterants, but to the presence of small portions of fusel oil and other bodies naturally produced by the fermentation, and which, by age or exposure to the oxidizing influence of the air, are either removed or changed into more agreeable products. Whisky, such as is used for the manufacture of alcohol, is almost strictly pure, as there is no incentive whatever to its adulteration.

"Whisky filtered several times through charcoal, which removes all coloring matter and other impurities, is undoubtedly the very purest form of liquor to be obtained, and though less agreeable, perhaps, to the palate, it is believed by many to be fully equal; for all medicinal purposes to the very best brands of imported spirits."

Professor Babcock also examined, with care, nine samples of lager beer and ale sold at retail stores in Boston. They came from different breweries in and near Boston and New York. In their analysis, the processes Dragendorff and Otto-Stas were employed for the examination of alkaloids and fraudulent or injurious bitters. The results showed that all of the samples were absolutely free from *coculus indicus*, *picric acid*, *strychnia*, or any other bitter, except that of hops and malt. All the samples were found to be pure, and free from injurious substances as alcohol in any form can ever be.

This conclusion is the same that has been reached elsewhere. The results of very numerous analyses of various kinds of beer, by chemists in this country and in Europe, have failed to show the presence of strychnia or other injurious adulteration in any of the samples examined.

Prof. C. F. Chandler, of the New York Board of Health, examined five different varieties of beer, upon which he reported—

"A most thorough examination failed to reveal any indication of the presence of picric acid, picrotoxine (the peculiar principle of *cocculus indicus*,) of alum, copperas, or any adulteration whatever."

The inference is fair, therefore, that the symptoms of alcoholism are owing to alcohol, and not to other poisonous ingredients contained in alcoholic beverages.—*Med. and Surg. Reporter.*

ARTICLE VI.

Metallotherapy.

An interesting report has just been presented to the Societe de Biologie of Paris. In August 1876, M. Burq obtained the appointment of a committee, consisting of MM. Charcot, Luys, and Dumontpallier (reporter,) to investigate the effects of the application of various metals to the skin.

M. Burq has maintained for a long time (since 1849) that in certain affections of general and special sensation, a return of sensibility may be brought about by the cutaneous application of certain metals. The same metal does not equally affect all patients; in fact, there exists an idiosyncrasy towards this or that metal. The particular metal is easily ascertained by applying in succession for several minutes a plate or plates of gold, zinc, copper, or iron, to the affected parts. M. Burq has also maintained, in the face of much incredulity, that the affections of sensibility stand in direct relation to some general morbid condition, and that from the external application an indication is obtained for the internal administration of the same metal. This is the basis of his system of *Metallotherapie.*

The commission have not occupied themselves with M. Burq's metallotherapeutic speculations, but have confined their attention to the facts as the external application of the metals. The experiments of the committee were begun in November of last year in the Salpetriere, and have frequently been the cause of much astonishment to visitors to *clinique* of M. Charcot. The patients experimented on have been chiefly those affected with hysterical hemianæsthesia or hystero-epilepsy. In these cases, both superficial and deep common sensation are abolished unilaterally to such an extent, that not the slightest reaction is exhibited, even when long needles are thrust through and through parts usually the most sensitive. In fact, as M. Dumontpallier in his report says, the procedure by which the fact of anæsthesia was demonstrated "would have been barbarous, had it not been practised on parts devoid of sensibility." Taste and smell are likewise abolished on the same side. Colocynth may be placed on the side of the tongue, and the most disagreeable odours held to the nostril, without exciting the slightest appearance of sensation or reaction. As regards sight and hearing, loss on the anæsthetic side is not usually complete but considerable, there being no signs of organic disease in the retina or ear. The temperature is also found to be lower on the anæsthetic side; and the muscular power, as tested by the dynamometer, considerably impaired. The committee have found, in accordance with M. Burq's statements, that there exists in different patients a special *aptitude metallique;* that is to say, that sensibility returns under the influence of a certain metal. This is determined by bending on the arm or leg, or anæsthetic part, plates of gold, copper, zinc, etc. After from ten to fifteen minutes, it is found that if the metal employed be the proper one, sensation begins to return at the point of application. The patient feels a sensation of heat or numbness; the part becomes red; and pricking with a needle causes great pain at the level of the bracelet and for some distance above and below it. At a given distance, well marked dysæsthesia, or perverted sensibility, becomes established.

When the metal is applied to the forearm, the sensibility gradually extends to the hand, and the temperature rises above that of the other side, as determined by a thermometer fixed in each hand. At the same time the muscular power rises very considerably above that which existed before the commencement of the experiment. Curiously, also, needle punctures now bleed freely; whereas in the anæsthetic condition scarcely a drop of blood showed itself even when the needle was thrust through the limb. What is true of common sensibility is also true of the special senses. By the application of the metal at or near the organs of special sense, a more or less complete restoration is effected.

The effect, however, is very transitory, and next day the anæsthesia is found to have returned. The patients generally complain of great fatigue, headache, and a tendency to sleep after each experiment. But perhaps the most remarkable phenomenon of all is that the return of sensibility under the influence of the metallic plates, is effected at the expense of the sensibility of the sound side. To this phenomenon the committee give the name *transfert de la sensibilite.* This takes place in a symmetrical manner. Thus, if the sensibility be restored to the arm by the application of the metal, it is found that the corresponding part of the sound arm has lost its normal sensibility. The same is true of the organs of special sense, and of temperature and muscular power. It would seem, therefore, that there is no real gain, but that a *plus* on the one side is accompanied by a *minus* on the other.

The committee have not yet ascertained the effect of the simultaneous application of the metals on both sides of the body. But experiments have been made on two cases of hemianæsthesia and hemichorea on the right side consequent on an attack of hemiplegia from organic cerebral mischief. This patient was subjected to experimentation with differant metals—zinc, copper, gold and iron. The result was negative as regards zinc, copper, and gold; but iron, applied to the thigh, arm and forehead, caused return of sensibility after twenty minutes' application. Sensibility gradually extended over the whole of the right side, and the hemichorea was sensibly diminished. Plates of iron applied over the nose and tongue also restored sensation there. Similar results ensued in another case on the application of gold. It is further remarkable that in these two cases the recovery has been permanent and not transitory as in the hysterical cases. M. Burq's statements having thus been fully confirmed, the committee next endeavoured to ascertain the *modus operandi* of the metallic plates. It having been suggested by several members of the society that the results were due to electrical action set up by contact of the metals with the skin, M. Regnard was entrusted with the experimental testing of the hypothesis. From Regnard's experiments with Du Bois Reymond's galvanometer, the fact was demonstrated that the contact of the metals with the skin did actually excite electrical currents, which varied with the metal employed. Thus the plates of gold caused a deflection of the needle of from two to twelve degrees, while similar plates of copper caused a deflection of from forty to forty-five degrees. This being established, it was rational to suppose that currents of like intensity furnished by a galvanic pile would produce effects analogous to those caused by the application of the metals. This also was experimentally verified, it being found that in those patients sensible to gold, a current of from two to twelve degrees caused a restoration of sensibility, and in those sensible to copper a current of from forty to forty-five degrees was necessary. A further interesting fact was made out in the course of these experiments, viz., that on varying the intensity of the currents, active and neutral points were found to exist in the galvanometic scale. Thus a patient sensitive to a current of 10 to 15 deg. ceased to be sensitive to a current of 45 to 90 deg., but again became sensitive to a current of 80 to 90 deg. The points of non-activity are termed by M. Regnard the *neutral points* of the scale.

What the explanation of these curious facts may be, is left undetermined by the committee.

The results of this investigation are so novel and so unexpected, that they cannot fail to stimulate further speculation and research. The committee compliment M. Burq on the favourable results of their labours, and recommend his memoir for competition for the Prix Ernest Godard.—*British Med. Journal.*

ARTICLE VII.

Periosteal Surgery in the United States.

In a short editorial with the above heading *The Lancet* (June 2, 1877,) says: "We have been favoured with a look at the New Lower Jaw-bone alluded to in our report of the Congress of German surgeons at Berlin, and which we believe to be, if not a unique specimen at any rate the first specimen of the sort seen in Europe. We allude to it with the more pleasure, as the operator, Dr. James R. Wood, Emeritus Professor of Surgery, in the Bellevue Hospital Medical College, is entitled to the great praise of having been one of the pioneers of periosteal surgery, which constitutes such a creditable and instructive chapter in the recent history of surgery. This particular operation was performed more than twenty years ago; and the merit of it consists of not only in its having been then a new kind of operation, but in the details of the procedure, which had to be thought out for the first time, and which have since become recognized principles.

"It is a great feat of what we are disposed to call physiological surgery to take away a whole bone, and to do it so carefully and with such preservation of the periosteum as to have it entirely reproduced in perfect symmetry and perfectly *in situ.* The new Jaw is smaller than the original one, but in other respects, in form and position, it is a wonderfully perfect reproduction. The patient was a girl eighteen years of age, working in a match factory; hence the phosphorous disease of the jaw, leading to necrosis and the necessity for removal. The operation was done by halves, one-half being left for weeks after the removal of the other, so as to steady the parts and determine the proper position of the new jaw, which would otherwise have been dragged down by muscles and caused great deformity. The patient perfectly recovered, and lived three years after. She then died of brain abscess, when the entire skull came into the possession of Dr. Wood. Both he and other operators have frequently repeated these operations with similar success. But patients are mostly alive, and, as Langenback lately said at Berlin, there is not another such specimen in the whole of Europe as the one we now notice.—*Med. News and Library.*

ARTICLE VIII.

Death while under Ether at the London Hospital.

An old man, sixty-nine years of age, was admitted into the London Hospital on May 12, suffering with obstruction of the bowels. He appeared old, even for his age. He was in considerable pain, which was referred chiefly to the right iliac region, and there was some tenderness also in the same place, as well as over the rest of the abdomen, which was distended and tense. It appeared from the history that the symptoms dated from two days previously; he was the subject of hernia, which came down from time to time, although he wore a truss. Two days before, his hernia being down, he reduced it, the reduction causing pain. He had been sick previous to the reduction, and the vomiting and prevailed afterwards. The surgeon to the case diagnosed a reduction *en masse*, both from the history and also the appearance of a depression in the integument over the external ring; and it was thought that some portion of an old sac, which was adherent to this integument had been reduced, and was dragging upon the integument and so giving rise to the depression or dimpling of the soft parts. With a view to get the hernia down, and to obviate the struggling which the pain of this process gave rise to, ether was administered. Clover's inhaler was used. For about thirty seconds he inspired only his expired air; he, then had, for about a minute, one-quarter to a half ether. There was some struggling at the commencement, and he did not breathe in the ether well. The mouthpiece was therefore frequently removed from his face. The amount of ether was then diminished, and as his lips looked blue it was entirely stopped; his breathing improved a little, but was not quite satisfactory. His pulse gradually became weaker, and finally stopped; respiration, however, continuing for thirty seconds or more. Sylvester's method of artificial respiration and galvanism were resorted to without success. The post-mortem examination showed that a large coil of small intestine had got caught in a figure-of-eight-shaped loop of mesentery adherent by both ends to peritoneum under the above mentioned pouch. The intestine was very much inflamed, and of a deep purple colour. Left ventricle uncontracted and flaccid. Lungs: Extreme emphysema, and containing little blood. Slight bronchitis. It would seem as though the man died more of shock than of ether. The jury also held this view, and returned, "Death from natural causes."—*Med. Times and Gaz.*

ARTICLE IX.

Dental Alloys.

BY HENRY S. CHASE, M. D.

Written for the Missouri State Dental Society.

During the last year I have experimented in the making of dental alloys. I have desired an alloy that would not darken to a disagreeable extent. Some excellent alloys discolor considerably in the presence of acid saliva. The substances of which plugs are made should be, in a measure as subject to chemical disintegration as the dentos in which it is placed. If an alloy plug darkens on its surface it shows that it has been subject to a chemical cause. To be sure, what may darken the surface of a plug might not injure dentos. For instance, sulphuretted hydrogen might darken a plug owing to a sulphide of silver being formed. The sulphuretted hydrogen would not disintegrate dentos. But some acid conditions of the mouth will darken the ordinary alloys Almost any of the alloys, that do not contract, are good preservers, if properly manipulated. Alloys *not* containing gold are liable to contract, or change their forms in plugs *weeks* after they have been used, although they may not in 72 hours. Gold controls contraction and expansion also. It controls also, in a measure, discoloration.

As *silver* is at present indispensable to an alloy plug, more or less discoloration must be expected in some mouths. But, in order to obtain the best results in the present condition of our knowledge, I have instituted hundreds of experiments. I assure you these experiments have required much time and patience, and have resulted in frequent disappointments, during the time occupied. The melting of metals is a simple enough thing; but their union in such proportions as is most desirable is neither simple, or *easy*, even after one "knows how." My experiments have at last resulted in three alloys which have been tested both in and out of the mouth many hundreds of times since last October.

I will designate these as Nos one, two, and three:

FORMULA No. 1.—Gold, 33⅓; Silver, 33⅓; Tin. 33⅓ This is a very quick-setting alloy, becoming exceedingly hard in a few minutes. It requires from 60 to 80 per cent. of quick silver. Chemically pure tin *filings* may be added to this, if desired, in certain proportions.

To 100 parts by weight of "No. 1," may be added 25 parts of tin filings. The effect is to take a less per centage of quick silver; to delay hardening, and to render the plug *less* tough. A less quantity of tin filing may be used, but not greater. A greater will make a plug defective by the "tube test."

FORMULA No. 2.—Gold, 25; Silver, 39; Tin, 36. This is less quick in setting than "No. 1," makes a sufficiently hard plug, and requires from 40 to 60 per cent. of quick silver. No *tin filing* can be added to this without injury.

FORMULA No. 3.—Gold, 20; Silver, 40; Tin, 40. This is more plastic and requires more time to harden than "No. 2." It requires from 30 to 50 per cent. of quick silver. It will not bear the addition of *tin filings.*

All of these alloys keep their color remarkably well—even under unfavorable conditions. All stand the "tube test" for not only days, but for months.

None but *chemically pure* metals must be used. None must be burned out in melting—at any rate, not more than half a grain in 100 should be lost in melting, or one-half of one per cent.

To do this requires skill, care, and experience. You can get the experience if you try as many times as I did before I succeeded. I procure a nice piece of charcoal that will not *snap.* Cut a basin in the end and use this for both crucible and ingot. Melt the gold first, then add the silver, when the latter is fluid and mixed with the former, add the tin. Stir well with a clean and *polished* steel wire. Cool as suddenly as possible by holding a cold steel hammer head on the melted surface of the alloy. After filing the alloy into powder, the particles of iron which it contained must be removed by a magnet.

These alloys may be washed while mixing with quick-silver. *Nothing* but *alcohol* is allowed. They should be mixed in the palm of hands, and *not* in a mortar, as *less* quick-silver is requited by the former method.

If washed, *perfect dryness* must be attained before using. This can be done by washing before adding *all* the quick-silver, and by making fine grains of the mass while blowing upon it. After it is dry, the balance of the quick-silver may be added.

These alloys are not to be used excepting in *dry* cavities.

I have freely given you now the results of many months' labor. If you are as successful as I have been in making and using these alloys, you will not regret it. If you fail, you may wish you had never made the trial.—*Missouri Dental Journal.*

ARTICLE X.

North Carolina State Dental Association.

The third annual meeting of the North Carolina Dental Association will be held in Raleigh, N. C., on Tuesday, September 4th, 1877.

Members of the profession are cordially invited to attend.

D. A. Robertson, *Secretary.*

Officers of the Association are as follows:

President.—Dr. V. E. Turner.
1st Vice-President.—Dr. J. W. Hunter.
2nd Vice-President.—Dr. E. L. Hunter.
Secretary.—Dr. D. A. Robertson.
Treasurer.—Dr. J. H. Crawford.

EDITORIAL, ETC.

The Johns Hopkins Hospital.—Baltimore City will soon have the grandest Hospital in the country.

"On June 23d Mr. Francis T. King, president of the Board of Trustees of Johns Hopkins Hospital, turned up the first sod to begin the building of the hospital which is to occupy over a block of ground in the eastern section of the city. The proceeding was entirely informal and was done at the instance of the workmen and in their presence. Prayer was offered for God's blessing, and Mr. King made a few remarks in regard to the plan and the object of the hospital. He then turned the sod at the centre of the administration or main building, which will occupy the most prominent location on the grounds, facing on Broadway, midway, at McElderry Street. It is to be of compressed brick, with 290 feet front, on Broadway and 90 feet regular depth. Projections of bay windows reaching to the roof will increase the depth at the ends and centre to 125 feet. It will be three stories high and trimmed with Cheat river stone like the Safe Deposit Company building on South Street. Two structures of the same material each 130 by 90 feet, will also face on Broadway both slightly in the rear of the centre building, one north and the other south of it. The one on the north at the Monument Street corner, will be known as the female pay ward, and that on the south, at Jefferson Street, as the male pay ward, both for the reception of patients able to pay for their accommodations. In the rear of the female pay ward, fronting on Monument Street, will stand the kitchen, to be of brick, 75 feet square. The nurses' home and building for the training and instruction of nurses and attendants will occupy a corresponding position facing on Jefferson Street, in the rear of the male pay ward. This building will be 100 feet square.

The officers' quarters, dining rooms, &c., will occupy a building 50 by 80 feet, to the east and north of the administration building. The house of the resident physician will stand east of the kitchen and female pay ward on Monument Street, and will be 50 by 75 feet in dimensions. East of this is to be located the operating theatre, as it will be known, an extensive structure, with one high story above the basement, 200 by 75 feet. The last building in this row on Monument Street will be the dead-house, at the corner of Wolf Street. Beginning at the rear of the central administration building a grand avenue, 170 feet wide, is to lead to Wolf Street, through the centre of the grounds. On either side of this avenue, occupying very nearly the centre of the grounds, will stand five common wards for the reception of general patients. Each of these will be 466 by 160 feet, and will stand 60 feet apart. Two octagonal bath-houses will stand between the administration building and the pay wards. The ground plan thus briefly stated provides for two rows of buildings on the north of the grand avenue and one row south, as the square between McElderry Street and Monument Street is longer than that between McElderry Street and Jefferson Street. This will leave ninety-two feet space on Jefferson Street from the building line. The plan for the use of this ground and that not occupied by other buildings in lawns, terraces, beautiful gardens, ponds, fountains, &c., is very extensive and elaborate. On the Wolf Street side will remain a front of 113 feet, which will probably be used for ambulance houses, &c. All the buildings will be connected with the administration hall by a wide iron corridor running from one structure to another. The entire grounds will be surrounded by an open iron railway four feet high, through which and over which a view of the premises may be gained.

The excavating for the foundation, begun by Mr. King, will be pushed rapidly forward. The seventeen buildings which stood on the southwest corner have been sold and the material almost entirely removed. The full survey of the grounds has been made and foundation points and lines for the several buildings marked with stakes. The grand avenue is being opened and the preparatory work is being pushed with vigor. The work is in charge of Dr. H. Billings, medical director; John R. Niernsee, architect, and John E. Marshall, superintendent."

Homeopathy in Danger—European News informs us that "the Vice-President of the British Homeopathic Medical Society has made a formal surrender of the principles of his craft to one of the leading practitioners of London, and has entered a plea for admission with his professional brothern into the pale of the regular profession. Such admissions have been of not unfrequent occurrence in the history of homeopathy on the part of the humbler practitioners of homeopathy, but this is the first instance, we believe of the surrender of one of the color bearers, and is every where regarded as the beginning of the end. Dr. Richardson, F. R. S., to whom the surrender is made, compliments his former adversary much after the manner of an old soldier upon the field of battle. He says "I have known Dr. Wyld personally and by repute since I have been in London; and although differences of views of matters of medical science and art have separated us from all professional intercourse, I have always considered him a gentleman of extended knowledge, good taste and truthful nature.

Dr. Wyld, perhaps the principal homeopathist of London, justifies his surrender of the principles of homeopathy in a candid avowal of the absurdities of this practice, a claim that all the leading practitioners of the present day have in reality discontinued it and most of them discarded even the name of homeopathy. He says: "It was the opposition which Hahnemann first encountered which drove him deeper and deeper into his peculiar views, until at last in his old age he often expressed extreme and intolerant opinions regarding the profession generally, but especially in relation to the question of the dose. Unfortunately many of the converts to the new system imitated the master more in his intolerance than in his genius, and this naturally led to those reprisals on the part of orthodox medicine"—which culminated in the resolution on the part of the British Medical Association (regular) in 1857 that "it was derogatory to its members to hold any intercourse with homeopaths."

Dr. Wyld proceeded then to notice the changes which gradually occurred in homeopathic practice, until nothing was left it but the name. "So-called homeopathists have almost entirely abandoned the use of globules, and have substituted doses in a tangible form. * * * Further we find * * * it is now their practice to make frequent use of all remedies of a simple kind, such as aperients, anodynes, opiates, anæsthetics, tonics, galvanism, hydropathy, etc. In short, we define our practice as rational medicine, including the law of contraries, plus the law of similars."

The wise President of the British Homeopathic Society surrenders also the anatomy of his craft. He says, further on: "We do not desire so to publish ourselves; we do not write Homeopathists on our door plates; many of our best books eliminate the name Homeopathy from the title page, and as a recent example a large number of our body have objected in a memorial to the title Homeopathic School."

And to show the earnestness of his feelings and that of those he represents, viz: the representive Homeopathists of London, he closes his letter in the following terms:

"To recapitulate, he admits first, that the views expressed by Hahnemann are often extravagant and incorrect; secondly, that Hippocrates was right when he said: 'Some diseases are best treated by similars and some by contraries,' and therefore it is unwise and incorrect to assume the title of Homeopathist; thirdly, that although many believe that the action of the infinitesimal in nature can be demonstrated, its use in medicine is practically, by a large number in this country, all but abandoned."

MONTHLY SUMMARY.

Excision of the Inferior Maxilla.—Dr. J. W. S. Gouley, of New York, reporter, presented a report of a case of subperiosteal excision of the entire inferior maxillary bone, and solicited from American and foreign surgeons records of their unpublished cases, to add them to those he has already collected for analysis in an essay he is now preparing. The doctor's patient was a female nineteen years old, with phosphorus necrosis of four years' standing, involving the entire lower jaw, made up of an enormous involucrum, rendering mastication impossible. March 19, 1864, the patient having been etherized, the entire jaw was removed by external incision, and she made an excellent recovery. When last seen, seven and a half years after the operation, the bone reproduction extended from the body to the rami of the jaw.

He said it was not common in phosphor-necrosis to find an involucrum, but in his case there was one, while there was none of the pumice-stone deposit of Stanly. He explained this by the violent phlegmonous periostitis which occurred a year previous.

As regards various operations, chiefly modifications of the external incision, he wished particularly to call attention to the intrabuccal, which offers many advantages.

The operation for removal of the lower maxilla was usually accomplished at two or more sittings, but in his list he included as one all which were merely continuations of the same.

Dr. Hutchinson, of Brooklyn, said in malignant tumors he should consider the intrabuccal operation as an unsafe one—there would not be the same certainty of complete removal; but for phosphor-necrosis he considered it perfectly feasible and easy. It was also applicable to removals of the superior maxilla.

Dr. Hyde said the incision must depend largely on the requirements of the case. He had usually removed sequestrum from the inside.

Dr. Gouley, in reply to a question by Mr. Lister, stated that the bone was entirely dead, and should have been removed two years earlier.

Prof. Lister thought the incision should be determined by the tumor. He certainly would not employ the intrabuccal one in malignant cases, but might in innocent ones; although even here in males the scar could be well concealed, and even in females was not serious if made behind the ramus.—*Med. Record Inter. Med. Congress.*

Excision of the Branches of the Fifth Pair in Neuralgia.—Prof. Weinlechner, in a communication to the Vienna Medical Society (*Wien. Med. Woch.*, Jan. 20,) stated that he had performed excision of the branches of the trigeminus in twenty cases of severe neuralgia. He had found the operation much more successful when the neuralgia was limited in extent than when it was diffused. The deeper and more central was the resection, the more certain was the relief of the neuralgia; but in very deep excisions we are deprived of the possibility of again resorting to the operation in case a relapse might render this desirable. Comparing this operation with that of tying the common carotid, we may say that in very obstinate and painful cases both modes of procedure may produce a temporary or permanent cure; but neither method is without danger, as they both are sometimes followed by pyæmia, erysipelas, etc. In general the ligature of the artery is the easier operation of the two; but in old persons there is the danger of atheromatous degeneration, while in the younger ones, if the ligature is followed by hemorrhage, severe disturbances of the cerebral nutrition may ensue. As a general rule it may be stated that neurectomy is to be preferred in limited neuralgia, while in diffused neuralgia with vascular dilatation, ligature of the carotid should be performed.—*Med. Times and Gaz.*

The Length of the Frœnum of the Tongue—M. BAILY (*Journal des Sages-femmes*) remarks that, instead of the condition known as tongue-tie preventing the child from sucking, it aids it in the performance of that function. It is but a vulgar error to suppose that tongue-tie is the cause of the child being unable to seize the teat. On the contrary, M. Bailly has seen a case where the tongue was perfectly free, unbridled by a frænum. The child in this case was unable to take the breast, but had to be fed by the bottle, because its long unbridled tongue was glued to the roof of its mouth. The child was unable to depress the tongue, and seize the nipple.—*London Med. Record.*

The Treatment of Atheromatous Cysts of the Neck.—Esmarch recommends in those forms of atheromatous cysts of the neck which can only be removed with difficulty, or with the formation of a large cicatrix, puncture of the sac, the injection of a one per cent. solution of carbolic acid, until the solution returns clear, and then the injection of a solution of a Lugol's solution, containing about three per cent. of iodine, and iodide of potassium in water, which he allows to flow out again after the lapse of a few minutes. If the tumor have not considerably diminished in size in the course of six or eight weeks the operation is repeated. In the course of half a year the cyst is usually reduced to the size of a small node.—*Med. and Surg. Reporter.*

Injections of Carbolic Acid for Neuralgia.—Dr. Merten, of Neuwedell, reports (*Allgem. Med. Cent. Zeit.*, Sept. 6. 1877) four cases of severe Neuralgia that were cured with surprising rapidity by one or two hypodermic injections of carbolic acid. In the first case, the patient, a hysterical young woman, had suffered for several months from strabismus and ptosis of the field of vision in the same eye by almost one-half. Ophthalmoscopic examination gave negative results. She was suddenly seized with intense neuralgia of the left malar nerve, for which twenty drops of a 2 per cent. solution of carbolic acid was injected over the cheek-bone. It caused at first intense burning pain, with redness and swelling at the point of injection, but one hour later all pain had disappeared. On the next morning there was no pain at all, the ptosis and strabismus had entirely disappeared, and the field of vision of the left eye had markedly increased. Unfortunately, the patient did not again present herself for observation. The second case was one of acute oöphoritis with severe neuralgia of the external cutaneous nerve of the thigh, and intense pain about the anus on defecation. Two injections of a syringeful of the 2 per cent. acid solution permanently relieved all the pains. The third case was one of suppressio memsium and sciatica. Two hours after injection of a syringeful of the above solution the pain ceased entirely and did not return. Menstruation was subsequently regular. The last case was one of myalgia of the right side of the neck, consequent on exposure to cold. A single injection of the 2 per cent. solution produced a cure.—*Practitioner.*

Anæsthesia.—Dr. Addinell Hewson, of Philadelphia, read a paper on "Anæsthesia, as produced by Nitrous Oxide and rapid breathing."

He stated the method had been suggested to him by W. G. Bonwill, a dentist of Philadelphia. and he had tried it in a number of cases, in public and private practice, with varying but satisfactory results. The method pursued was to cause the patient to breathe from forty to fifty times in the minute, the effect of which in from three to five minutes was a tingling of the surface, with flush face. Consciousness remained unimpaired and the patient would perform any act desired. but was rendered totally devoid of sensibility. This method would be advantageous for short minor operations, especially those about the nose, throat, etc. The process occupied a longer time in young people and in cold weather. He explained the theory of its action by the retention in the blood of carbonic acid.—*Med. Record. Inter. Med. Congress.*

On Local Anæsthesia by Bromhydrate of Quinine.—DR. THAON (*Nice Medicale,* January, 1877) has observed a case of intermittent fever which resisted the administratisn of bromhydrate of quinine administered internally, or by the hypodermic method. Eighty centigramms, and even one gramme, were given in this way for several days without destroying the fever; but one of the punctures made on the forearm towards the external border at four finger-breadths below the elbow and probably at the level of one of the anterior branches of the musculo cutaneous nerve, produced complete anæsthesia of the skin over a spot nearly five inches long by two and a-half inches in breadth. The loss of perception of heat was somewhat more extensive. One month after the puncture, this anæthesia remained almost as considerable as at the commencement. Dr. Thaon thinks that some application may be made of this fact to the treatment of neuralgia —*London Med. Record.*

Bromide of Potassium as a Caustic.—In a paper read at the recent meeting of the French Association for the Advancement of Science, M. Peyrand, of Dibourne, claims for bromide of potassium certain properties hitherto but slightly recognized—properties which will extend already wide range of the therapeutical uses of this salt. He found that subcutaneous injection in rabbits of concentrated solutions of the salt led to sloughing of the skin, and from this he was led to try the value of what he considered to be the escharotic properties of bromide of potassium upon malignant and other growths, either by means of injections into the tumour or by the application of the powdered salt to a raw surface.- The action of the salt is completely resisted by the tegument. His first clinical experiment on the subject took place in April, 1874, when, by means of daily applications of powdered bromide, he affected the removal within twenty-eight days of an epitheliomatous growth on the face. He has since had equally good results from this treatment of atonic ulcers of the leg, rapid cicatrization following the separation of sloughs produced by the application. In such cases he uses either the powder or an ointment of one part in five, or a mixture (one in ten) of glycerine and the bromide. In many skin affections, as chronic eczema, pityriasis, and acne, in phagedæna, ulcerative stomatitis, and many other local inflammatory disorders, he has found it of use. As a local hæmostatic, a solution of one in fifty has served for epistaxis, and as a general hæmostatic its success in many cases of hæmoptysis and metorrhagia was very marked, where ergot, perchloride of iron, and rhatany had failed.—*Lancet.*

Death during Etherization.—Dr. Benjamin W. Robinson, of Fayetteville, N, C., reports (*Virginia Med. Monthly*, April, 1877) the case of Mrs. McNeil, who consulted him on account of a tumour of the breast, which he extirpated while the patient was under the influence of ether. The tumour returned, and the operation repeated in ten months. Again after the lapse of six months, a third operation was performed, and Squibs ether was administered in a conical inhaler. During the inhalation the pulse improved in volume and force. In about twenty minutes after the operation was begun. it was announced that, with gradually increasing pallous, the radial and temporal pulse which had been failing since the operation began, were extinct, and that the respiration was irregular. Brandy was administered subcutaneously, the foot of the operating table raised, and artificial respiration practised. The lapse of a few minutes promised thorough resuscitation, the patient became conscious, the horizontal posture was restored, and the operation was continued without the inhalation of any more ether. In a few minutes the patient vomited, after which it was found that she was sinking. All efforts at resuscitation now proved unavailing. A post-mortem examination appears not to have been made, but the history of the case leads to the suspicion that death was caused by the trachea becoming choked up with vomiting matter. —*Med. News and Library.*

Phenicated Camphor.—Under this title Dr. Saulez describes (*Bull. de Therap.*, August 30) a combination of carbolic acid and camphor, which exerts a remarkable influence on wounds of an unhealthy character, as proved by him in the Romarantin Hospital. The acid will take up a large quantity of camphor, but Dr. Saulez ordinarily employs a solution of two grammes and a half of the powder in one of the acid (nine grammes to one of alcohol,) which produces a pale yellow oleaginous liquid, in which the disagreeable odour of the acid is no longer to be recognized. It is not miscible with water or glycerine, and in employing it we have first to emulsify it by the addition of a twentieth part of the phenicated camphor either to olive oil or infusion of saponaria.—*Med. Times and Gaz.*

Poisonous Properties of Glycerine,—From a series of experiments, made by the subcutaneous injection of glycerine in dogs, Drs. DujardinsBeaumetz and Audige arrived at the following conclusions: I, Chemically pure glycerine may induce in the dog, within twenty-four hours, when introduced under the skin fatal accidents if employed in the dose of eight grammes to 1000 grammes of the weight of the animal. 2. The general characters of such poisoning accidents (acute glycerism) resemble within certain limits, those of acute alcoholism. 3. The necroscopical lesions in glycerinism are analogous to those of alcoholism, whence it would appear that the toxical action of the two bodies is very much the same. 4. In a therapeutical point of view, the introduction of too large a quantity of glycerine into the system is, probably, not without some danger.—*Med. Times nnd Gaz.* from *Bull. de Therap.*

Death from Chloroform.—Three deaths from the inhalation of chloroform are reported in the London weeklies for September 23. In two of them the history was that so common in such cases—violent struggling, stoppage of the pulse, death, and fatty degeneration of the heart discovered afterwards. The third case was the result of the inhalation when the stomach was full of food. Vomiting was followed by a deep inspiration, and the trachea and larynx filled with half-digested food, so that even tracheotomy did not restore the power of breathing. —*Med. News and Library.*

Suppression of the Salivary Secretion.—(*Can. Med. and Surg. Jour.*, April, 1877.] Dr. D. Baynes relates the details of one of those rare cases occurring after an attack of acute tonsillitis. Both Steno's and Wharton's ducts were found open on examination. The patient said that his tongue felt too large for his mouth, and that the latter seemed filled with tallow. He was continuously obliged to wash his mouth or drink both night and day to prevent the choking sensation experienced from the dryness of the mucous membranes. After three weeks' ineffectual treatment by stimulating gargles and internal remedies, a copious flow of saliva was induced by passing for ten minutes the frequently reversed current of a 12 cell zinccarbon galvanic battery through the parotid gland, the negative pole being connected to a probe placed in Steno's duct, while the positive was applied to the nape of the neck.—*Detroit Med. Journal.*

Nussbaum's Narcosis.—[*Neues Rep. of Pharm.*, 1876, *New Remedies*, Mar. 15, 1877.] The peculiar state called Nussbaum's narcosis, produced by the subcutaneous administration of a few centigrammes of morphia, about fifteen minutes previous to placing a patient under the influence of chloroform has already been known for some time, and made use of with great benefit during operations in the mouth or in fauces, as the full anæsthetic effects of the chloroform are preserved while the loss of consciousness is by no means complete. Still better results have lately been obtained by substituting a subcutaneous injection of a few centigrammes of muriate of narceine for the morphia. The hypodermic solution is best made as follows: 0.3 gm. of muriate of narceine are mixed with 20 gm. of distilled water in a flint or test-tube; the latter is placed in a water motor and heated until the salt is dissolved.—*New Remedies* 1877.

The Russian Female Medical School.—This, at the present time, comprises for the five years 430 students, of whom seventy-three are Israelites, nineteen Polish Catholics, eleven Polish Protestants, and the rest Orthodox. In order to belong to the school, women must attend the regular course of lectures, and undergo special examinations. All the Governments of the empire furnish students for this school. They belong to the middle classes, and are generally from twenty to twenty-five years of age, very few having passed their thirtieth year. Among them are sixty-eight married women.—*Med. and Surg. Reporter.*

Properties of the Human Gastric Juice.—M. Charles Richet has been studying these matters upon the person of the patient on whom Verneuil successfully performed gastrotomy. He has reached the following conclusions: 1. The acidity of the gastric juice, whether pure or mixed with food, is equivalent to 1.7 grammes of hydrochloric acid to a thousand grammes of fluid. 2. Acidity increases slightly at the end of digestion, and is independent of the quantity of liquid contained in the stomach. Wine and alcohol increase, but cane-sugar diminishes it. 3. If acid or alkaline matters are introduced, the gastric juice tends to return to its normal acidity. 4. The mean duration of digestion is from three to four and a half hours or more. Food does not pass successively, but in masses 5. According to four analyses made by a modification of Schmidt's method, it was proved that free hydrochloric acid exists in the gastric juice. 6. It is possible to extract all the lactic acid contained in the stomach, and to prove that there is one part lactic acid to nine parts hydrochloric acid. 7. Following the method of Berthelot, that is, by agitation with anhydrous ether and deprived of alcohol, it can be shown that lactic acid is free in the gastric juice. 8. The question so long in controversy as to the nature of the free acid in the stomach seems almost solved, and it may be said that in every 1,000 grammes of gastric juice there are 1.53 grammes of hydrochloric acid and 0.43 of lactric acid.—*Lyon Medical,* May 13, 1877,

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ARTICLE I.

American Dental Association.

The Seventeenth Annual Session of this Association was held in Chicago, August 7th, 8th, 9th and 10th, 1877, at the Grand Pacific Hotel; Dr. George W. Keely, of Ohio, presiding. Among those present were the following members of the profession:

George R. Thomas, George L. Field, Joseph Lathrop, H. H. Jackson, Detroit; C. D. Cook, A. H. Brockway, Brooklyn; J. Taft, W. D. Howe, E. Osmond, H. A. Smith, D. W. Clancey, Cincinnati; W. O. Kulp, Davenport, Ia.; Homer Judd, W. N. Morrison, C. W. Spaulding, St. Louis; Charles P. Prayne, C. R. E. Koch, Gorton Nichols, T. W. Brophy, E. S. Talbot, George H. Cushing, J. N. Crome, A. W. Harlan, M. S. Dean, E. Housinger, E. D. Swain, W. C. Dwyer, W. W. Allport, A. W. Freeman, Chicago; B. M. Wilkerson, Baltimore; L. D. Shepard, George F. Waters, Jacob L. Williams, Boston; J. F. Morrison, Ottawa, Ill.; Thomas Fillebrown, Portland, Me.; M. H.

Webb, Lancaster, Pa.; M. S. Hand, Joliet, Ill.; K. B. Davis, Springfield, Ill.; W. H. Morgan, J. C. Noel, Nashville, Tenn.; E. C. Stone, Galesburg, Ill.; Corydon Palmer, F. M. Odell; W. H. Atkinson, John Allen, New York; C. A. Ketcher, Rockford, Ill.; J. A. Watling, University of Michigan, Ann Arbor; L. C. Ingersoll, Keokuk, Iowa; J. A. Harris, Pontiac, Mich.; C. S. Smith, Elgin, Ill.; John Campbell, Bloomington, Ill.; William H. Goddard, Louisville; J. H. McQuillen, G. T. Barker, Philadelphia; F. H. Rehwinkle, Chillicothe, O.; George J. Fredericks, New Orleans; Horace A. Mansfield, Evanston, Ill.; J. C. McCoy, Booneville, Mo.; George W. Keely, Charles J. Keely, Oxford, O.; S. M. Sturges, Quincy, Ill.; S. B. Brown, Ft. Wayne, Ind.; Merrit Wells, Indianapolis, Ind.; Edgar Palmer, LaCrosse, Wis.; J. M. Hurtt, Peoria, Ill.; A. S. Chapman, Princeton, N. J.; A. O. Rawls, J. B. Kidd, Lexington, Ky.; S. B. McDonald, Conneautsville, Pa.; J. P. Wilson, Burlington, Ia.

Reports.—The local Committee of Arrangements reported on the accommodations secured for the members; the Executive Committee suggested a change or two in the programme; the Committee on Credentials made its report of those who were accredited delegates; and the Publication Committee reported on the publication and distribution of the minutes of the last session, apologizing for their late appearance and charging up the delay to the stenographer. The Reports were adopted.

Dr. Atkinson, Chairman of the Special Committee, presented a report recommending the division of the Association into permanent sections, similar to those in the American Medical Association. The report was made the special order for Thursday morning at 10 o'clock.

Dr. M. S. Dean, of Chicago, Chairman of the Committee on Physiology, read an exhaustive paper on the subject of Vital Action. The gentleman showed, by a long course of argument, that vital action resists the progress of caries in the dentine, and that under certain circumstances changes occur within the structure of the dentine from irritation produced by caries, which are due to vital action.

Dr. Atkinson disputed the propriety of the distinction made between organic and inorganic action, claiming that it was all vital action, and all operated by one power.

Dr. Chase, of St. Louis, and Dr. Waters, of Boston, cited cases in support of the theory of vital action.

Dr. Taft moved that the privileges of the floor be granted to Dr. Robertson, of Manchester, N. H., an old member of the profession, who had had the misfortune to lose his sight. The motion was carried, and Dr. Robertson cited his own case to show that dentine resists decay and forms new deposits.

Dr. Barker, of Philadelphia, took the same ground as that taken by Dr. Atkinson. Vital action and chemical action were the same, differing only in degree.

Dr. Judd, of St. Louis, claimed that the deposit of earthly matter in the cells was brought about by vital action. In his opinion, there was quite a difference between vital and chemical action, and in many cases the former had a great influence in determining the latter.

The discussion was prolonged until 1 o'clock, when the session adjourned till the afternoon.

AFTERNOON.

The afternoon session began at 3 o'clock. The Secretary said he had a report written by Dr. J. N. Farrar, of Brooklyn, N. Y., of the Committee on Physiology, on the subject of "North Light vs. Sunlight," but that, while the chirography was plain enough, the entire absence of anything like punctuation marks, and the peculiarity of the wording, made it impossible to read the report in such a way as to do justice to the author The latter had expressed in his letter to the Secretary a fear that the reading of the paper would not do him justice, and, judging from the progress which he (the Secretary) had made in deciphering it, he was of opinion that this fear was well grounded.

The reading of the paper was deferred until Wednesday morning.

Dr. L. C. Ingersoll, of Keokuk, Ia., read a paper entitled, "Is the Dental Pulp Essential to the Integrity of the Dental Structure?" The doctor's answer to his own question was, in brief, that too much stress had been laid on saving the pulp, and there had been too long-continued efforts to save its vitality. In his opinion it was no longer a question of the preservation of the pulp, but the preservation of the teeth. He advised the removal of the devitalized tissue, and in case this was impossible, what remained should be dried of its watery portion and embalmed. Above all, he would advise trying to save the teeth rather than the pulp.

Dr. A. O. Rawls, of Lexington, Ky., and Dr. Barker, of Philadelphia, took precisely opposite views, and the latter stated, incidentally, that Philadelphia dentists were not much of a success in capping pulps.

Dr. Sturges, of Quincy, on the other hand, was disposed to defend the paper. In Keokuk it would be considered a very practical paper, and it would be thought a practical paper in Philadelphia if they only knew something there. [Laughter.]

Dr. Robertson drew on his own experience in connection with this matter.

Dr. Ingersoll made another plea for the salvation of the tooth rather than the pulp.

The discussion was long drawn out,—Drs. Robertson, Allen, Atkinson, and others contributing to the general information on the subject.

Dr. F. H. Rehwinkle read a paper on Pyorrhea Alveolaris.

After some miscellaneous business of little importance the Association adjourned until Wednesday morning.

WEDNESDAY, AUGUST 8TH, 1877.

The Treasurer, Mr. William H. Goddard, presented his annual report, from which it appears that the balance on hand Aug. 1, 1875, was $175; cash collections during the year, $715; total, $890; expenditures, $601.36; balance to date, $288.64.

Dr. Farrar's paper on "*North Light vs. Sunlight*" was then read by the Secretary. It covered some fifty pages of legal cap, and the reading consumed the better part of an hour. The paper related chiefly to the health of dentists, the author holding that steady attention to work in a north light was productive of weakness and disease. Health and comfort suggested the freer use of sunlight, which, according to Sir David Brewster, was the very life-blood of nature. The vital statistics of hospitals would reveal the fact that those who enjoyed the sunlight thrived far better than those who did not. And yet some physicians were so blind to these facts that they persisted in the worship of that dangerous idol, north light. The detrimental effect growing out of the absence of sunlight was seen among the operatives of our factories, among the poor huddled together in dark tenement houses, in their pale, lean, cadaverous faces, and the general air of weakness which seemed to be one of the accompaniments of their existence. The author of the report detailed various experiments made with bay-windows placed in such positions as to get the greatest share of sunlight, and recommended that, where it was possible, dentists should have a southwest bay-window; through which the warm, health-giving rays of the sun could shine from morning till night.

Dr. McQuillen, of Philadelphia, said he used to be in favor of north light. That was when he was young. At that time a medical friend told him he would change his views when he reached more mature years. That change had come. He would even advise people to walk on the sunny side and not the shady side of the street, although he was compelled to admit that it might be well in July and August to look out for sunstrokes.

Dr. Spalding, of St. Louis, thought a liberal eating of fruit would prove of advantage to those who could not get the sunlight.

Dr. Waters, of Boston, related how he had succeeded through the agency of the sunlight, in hastening the growth of the wriggling tadpole into the juvenile frog. He, also, was in favor of the fruit diet.

Dr. Rehwinkle, of Chillicothe, O., could not speak too highly of the paper. It should be published and studied. Mothers should read it and follow out its suggestions. He alluded to the prevalent American practice of shutting up a house so as to keep out the sunlight during the day, and remarked that it was all wrong.

Dr. Thomas, of Detroit, said a south room was to be preferred even on the score of comfort, as it was cooler than a north room. As far as the light was concerned, there was no question that the light coming from the south was superior to that from the north.

Dr. Barker, who started out with the rather incredible statement that he was a modest man, undertook to overthrow the conclusions arrived at in the paper, which were the obvious sense of the Association. He cited his own case, said he had operated for twenty years in a north light, alluded to the ways of artists and mechanics who used the clear north light, and concluded by showing a sun-burned hand as an evidence that the north light had exercised no detrimental effect upon him.

Dr. Freeman, of Chicago, said it was not the fault of some people that they were strong and hearty enough to eat sole leather. [Laughter.] In like manner, Dr. Barker's strong, vigorous nature could withstand the baneful effects of the north light.

Dr. Atkinson was disposed to criticise the paper. In the first place, light was light, whether it came from the north or from the south, and he believed that more eyes had been injured by too much than by too little light. There was too much of an easy-going disposition to accept the statements of those who had made experiments in this matter as conclusive, but authorities could not, in his opinion, sway the eternal principles of verity.

The discussion proved very fruitful of "opinions," and the subject was finally dropped with the implied recommendation that dentists should take frequent sun-baths, even if they did not draw, plug, and fill people's molars and incisors by the aid of the sunlight.

At this point the Association adjourned until 3 p. m. to enable the members to accept an invitation to visit the Board of Trade and learn how young operators get their eye-teeth cut in that modern Babel.

On re-assembling, Dr. Rehwinkel moved to admit as honorary members Dr. Adolf Petermann, of Frankfort-on-Main, and Dr. George Von Langsdorff, of the University of Freiberg. The motion was carried, and the Secretary instructed to notify these gentlemen of their election.

Some discussion took place on Dr. Rehwinkel's paper on "*Pyorrhea Alveolaris*," i. e., loosening of the gums. The paper itself took the ground that there was a cure for this disease, which had previously been considered incurable, and the mode of treatment which it recommended was the continuous removal of the tartar and the treatment of the gums with thymol in alcohol.

Dr. Rawls, of Lexington, Ky., did not think the author of the paper had touched the real cause of the disease. In fact, according to Dr. Rawl, the cause of the disease was not known, and the proposed treatment would not, in his opinion, meet the case.

Dr. Shepard, of Boston, spoke favorably of the treatment pursued by Dr. Riggs, of Connecticut. According to Dr. Riggs, this disease was constitutional in its origin and results, and his treatment consisted in the surgical removal of the deposit on the teeth. Dr. Shepard cited a case where a patient had lost his appetite, suffered from dyspepsia and other uncomfortable symptoms, and this treatment of Dr. Riggs' had restored him to perfect health in six weeks. In Dr. Shepard's opinion, surgical treatment alone insured recovery.

Dr. Palmer, of New York, thought too much time was being spent on this subject. In his opinion this disease had received more attention and had been raised to more importance than it deserved. Any dentist could treat it by following the ordinary teachings of his profession.

Dr. Barker, of Philadelphia, contended for a treatment which should take into account systemic remedies and hygienic rules.

Dr. Atkinson was disposed to quarrel with those of his brethren who, in the course of the discussion, had called this disease an abscess. It wasn't an abscess, or any such thing, but an ulcer. Dr. Atkinson put no faith in mere surgical treatment, and recommended, in addition to the cleaning of the tooth and the scraping away of the deposit, the washing of the tooth with warm salt and water, after which the pocket should be filled with aromatic sulphuric acid. The Doctor also paid considerable attention to the subject of diet, the proper care of the teeth, etc.

Dr. McQuillen, Dr. Rehwinkel, Dr. Judd, Dr. McDonald, and others prolonged the discussion until after 6 o'clock, when an adjournment was had until the evening session.

EVENING SESSION.

The Association was called to order at 8:15 o'clock.

Dr. Allen, of New York, introduced a resolution providing for the appointment of a committee of three to revise the code of dental ethics so that a harmony might be created that did not now exist.

The resolution was discussed pro and con by Drs. Spaulding, of St. Louis, Morgan, of Nashville, Tenn., and Allport, of this city, and was finally indefinitely postponed.

Dr. Edgar Palmer, of LaCrosse, Wis., then read a paper entitled "Alcohol, and Its Effect upon the Teeth." The paper was full of interest and lengthy. It first treated on the effect of alcohol on the physical system, wherein it was argued that alcohol was without nourishment, and the taking of it into the stomach was to superadd to the necessities of organic life. Secondly, it treated of its effect on the membranes, and the conclusion was reached that alcohol contributed largely to the degeneracy of the dental organs.

The paper was dicussed by Dr. Atkinson, of New York, and placed on file and ordered printed.

Committee reports were next called for, but, no reports being ready, they were passed.

Dr. J. S. Cassidy, of Covington, Ky., read a paper on "Chemistry," which occupied thirty minutes.

The Association then adjourned until Thursday morning.

THURSDAY, AUGUST 9TH, 1877.

The special order was taken up,—the report of the special committee recommending the division of the Association into permanent sections. After considerable discussion, the report was recommitted.

The next thing in order was the reading by Dr. Taft of a paper prepared by Dr. C. G. Essig, of the Committee on Chemistry, on the subject of "*Mercury and its Compounds in Dentistry.*"

The report went on to say that the objection had been brought against the red vulcanized rubber plates that they contained free mercury, and were, therefore, poisonous. The report took the precisely opposite ground, the author detailing several tests made which showed that the red plates do not contain free mercury.

Dr. Palmer, of New York, claimed that there was free mercury in such plates, and mentioned instances where persons had suffered from using them.

Dr. Kennicott at this point endeavored to join in the discussion, but the Treasurer objected on the ground that as the gentleman had not paid his annual dues he was not entitled to the privileges of the floor.

Dr. Kennicott replied that he had tendered his dues and the Treasurer wouldn't receive them.

The Treasurer retorted, that the gentleman wasn't a delegate, until he had paid his dues, and referred to the Constitution of the Association.

Dr. Atkinson moved to allow Dr. Kennicott the privileges of the floor, but the motion was voted down.

The discussion of the subject being resumed, Dr. Kulp remarked, in reply to Dr. Palmer, that the facilities for experiment were present, and he would like to see a proof of his statements. For some reason or other the offer was not taken.

Drs. Gardner, Robertson, Noel, Osmond, Frederick and others continued the discussion, some holding that the mercury in the vulcanite was insoluble, and therefore harmless, while others took the opposite view. Each side related the results of experiments and tried to prove the correctness of its position. Dr. Judd's remarks were rather practical and were received with considerable favor. He said these experiments were likely to run, and had run, into ridiculous extremes. It was claimed that this sulphuret of mercury was insoluble. The truth was that it was just about as insoluble as arsenic, and if anybody wanted to experiment with arsenic, there was no objection to his taking a spoonful into the mouth and seeing whether it would produce any effect or not.

Dr. Shepard read the paper of Dr. C. A. Brackett, of the Committee on Therapeutics, on "*Dental Therapeutics.*"

The report considered the usefulness of the various pain-destroyers in use, spoke a good word in this connection for carbolic acid with arsenious acid, and for salicylic acid, but closed with the statement that of late years there was a growing disposition to avoid the use of any of these agents except in the very severe operations.

At this point the Association adjourned until afternoon.

On reassembling in the afternoon, Dr. F. M. Odell, of New York, read an exhaustive paper on the general subject of *Therapeutics.* The report concluded with the declaration that habits of cleanliness, good ventilation, abundant supply of good food, proper regulations as to time and quantity in regard to eating, a full satisfaction of the system in its demand for sleep, attention to business which should leave no time for sickness, were measures both prophylactic and therapeutic, and which, if followed out, would lead to the greatest earthly happiness.

Dr. Atkinson, one of the oldest members of the Association, spoke of Dr. Odell's paper as the best correlation and statement of the nature of disease and its treatment he had ever heard. In fact, it was such an able presentation of the whole matter that he had not a single criticism to make.

Some further discussion ensued on the subjects treated of in the papers read at the morning session. Dr. Judd, Dr. Atkinson, Dr. Rehwinkel, and others had "views" to pronounce.

Dr. G. H. Cushing, of this city, Chairman of the Committee on *Operative Dentistry*, read a report on the present status of that branch of the profession. He spoke of the materials in use in the filling of teeth, and stated, as the result of an extensive correspondence with leading dentists, that the use of tin in combination with gold had been resorted to to a very limited extent, and that the use of amalgam, as well as non-cohesive gold, had largely increased and was still increasing. Operative dentistry to-day occupied a conservative position, running neither to one extreme nor the other, as regards methods. In conclusion, the report stated that one of the great needs of the present day was the organization of one or two institutions liberally endowed and independent of the tuition of pupils.

The last sentence particularly was received with applause.

A. W. Harlan, of this city, read a supplemental report on the same subject. According to this document, amalgam was far inferior to gold in fillings.

The report was briefly discussed by Dr. Rawls, Dr. Howe, Dr. Webb, and others. At 5 o'clock the Convention adjourned until evening, and the members in the meantime enjoyed a carriage-ride to Lincoln Park, up and down the Lake-Shore Drive, and back down town through the avenues on the North Side.

ELECTING OFFICERS.

The Association was called to order at 8:30 o'clock.

Dr. Keeley, of Ohio, introduced a resolution providing for amending the constitution so that in the future local Associations should be entitled to one delegate to the General Association for every fifteen members. Laid over under the rules.

On motion an order was drawn for the salaries of the Secretary and Treasurer.

Prof. Taft, of Cincinnati, introduced a resolution providing for the appointment of a committee of three to revise the nomenclature and terminology used by the profession, to report at the next meeting.

After some discussion, the resolution was adopted, and Drs. Taft, Judd, and Atkinson were appointed as the Committee.

The election of officers for the ensuing year was then proceeded with, resulting as follows:

President.—Dr. F. H. Rehwinkel, of Ohio.

First Vice-President.—Dr. L. D. Shepard, of Boston.

Second Vice-President.—Dr. G. T. Barker, of Philadelphia.

Corresponding Secretary.—Dr. M. H. Webb, of Philadelphia.

Recording Secretary.—Dr. M. S. Dean, of Chicago.

Treasurer.—Dr. W. H. Goddard, of Louisville.

Executive Committee.—Drs. Homer Judd, of St. Louis; J. H. Fillebrown, of Portland; and W. H. Morgan, of Nashville.

Niagara Falls was selected as the place for the next meeting.

FRIDAY, AUGUST 10TH, 1877.

After some miscellaneous business, the following gentlemen were elected honorary members of the Association:

J. Smith Turner, M. R. C. S., London, England; Mordaunt Stevens, M. D., D. D. S., Paris, France; Charles S. Tomes, M. A., M. R. C. S., and John Tomes, M. R. C. S., London, Eng.; E. Mosgitol, M. D., Paris, and Prof. Wedl, Vienna, Austria.

Drs. J. Taft, and Atkinson, took the newspapers of the city to task for styling Dr. Goddard, Treasurer, a "watch dog," and saying that he had a gruff voice. Dr. Allport, of Chicago, offered the following resolution, which, after discussion was adopted:

Resolved:—That this Association fully indorses the action of its Treasurer in exacting dues in full from all members before they are allowed to take part in the proceedings, and, in so doing, he is only carrying out the law. Dr. Corydon Palmer, of N. Y., delivered a brief address on Operative Dentistry, which he illustrated by figures and diagrams upon the blackboard, and which led to a spirited discussion. A letter upon the subject of transplanting teeth, by Dr. W N. Morrison, of St. Louis, was then read by the Secretary. The Committee on "Mechanical Dentistry" then submitted their report, after which the subject of Dental Education was discussed; a report being read by Dr. Thos. Fillebrown, of Maine, on Dental Colleges. In the afternoon Dr. Shepard, of Boston, offered resolutions of thanks to the proprietors of the Grand Pacific Hotel, for furnishing Hall and Stationery free of cost, which were unanimously adopted. The following Standing Committees for the ensuing year were appointed:

Physiology.—M. S. Dean, C. W. Spalding, J. H. McQuillen.

Pathology.—G. R. Thomas, W. H. Atkinson, D. C. Hawkhurst.

Histology and Microscopy.—G. V. Black, G. F. Waters, C. N. Pierce.

Chemistry.—T. L. Buckingham, L. G. Noel, W. A. Bronson.

Therapeutics.—F. M. Odell, L. C. Ingersoll, C. C. Chittenden.

Operative Dentistry.—H. A. Smith, L. D. Shepard, M. H. Webb.

Mechanical Dentistry.—A. L. Northrop, H. H. Keith, W. M. Morrison.

Education.—J. N. Crouse, Thomas Fillebrown, G. J. Fredericks.

Literature.—C. D. Cook, A. H. Brockway, W. H. Morgan.

Etiology.—G. T. Barker, D. W. Clancy, J. F. Marriner.

Prize Essays.—H. Judd, W. W. Allport, C. S. Stockton.

Dr. A. H. Brockway read an interesting report on "The Introduction of Modern Inventions in the Practice of Dentisty," after which the newly elected officers were installed, and the Association adjourned, to meet at Niagara Falls in 1878.

ARTICLE II.

A Canadian Dentist in Germany.

BY WM. R. PATTON, D. D. S., COLOGNE, GERMANY.

Through some years experience of dentistry in a German centre, a few observations on the practice of our profession may not prove totally uninteresting to some of your readers —for among the very large majority of those with whom I came in contact during my last visit to the States and Canada, a decided lack of knowledge was shown relative to Continental practice and theory, combined with as decided a thirst for information. Our Continental colleagues do not stand so high in regard to operative work as the representatives of our specialty on the other side of the Atlantic, and this may be easily accounted for by the want of practical study in such institutions, devoted solely to that purpose, as the American colleges offer to the dental aspirant.

Until but lately, comparatively speaking, the German dentist has been struggling against the same disadvantages that the American suffered many years ago, viz: the acquiring of the knowledge they sought for, through the office of business of some practictioners in the capacity of drudge or assistant, a knowledge charily imparted through vague fears of later competition, being his only means of advancement.

Notwithstanding the foundation during the last few years of dental chairs in Berlin and Leipsig, etc., they are proved to be more theoretical than practical, and there is a general feeling, which is now expressing itself, from the leading class of the profession, for improvement.

General convocations of dentists, provincial and local, take place mostly yearly, in the American style, when dental subjects are discussed.

That a precedence is taken by American dentists on the continent, could be practically shown by naming the leading practitioners in most cities of large population: however as it is not my intention to give cause for rival comparison I will rigidly abstain from any thing verging on personality, merely observing in the interest of the profession—that dentistry on the Continent as represented by Americans, can claim the highest practical intelligence—also that there are native Continental practitioners whose writings as well as researches in the dental field have made their names known not only to Europe but America.

Refering to what I have remarked about the general lack of dental education on the Continent, I must in justice say that an annual increase occurs in the number of those who visit America from these shores in search of improvement, and who on their return seldom fail to meet with a just appreciation of their merits.

I am sorry to state however that the larger number remain but for one course, and having picked up somewhat at the practical manipulation, do not thoroughly perfect themselves, but return to compete on a firmer groundwork with the colleague who has not been capable of the same advantages.

American dentistry is represented as a body by the *American Dental Society of Europe*, the last meeting of which was held in Paris. Through absence, (being then in Canada) I cannot give you an account of that convention. The topics treated however, are of the same standard and general character of those discussed at similar assemblages in the United States; for example the list of essays for this summer embrace:

(1) Irregularities of the Teeth, cause and treatment.

(2) Cause of " " " "

(3) Is it desirable to separate Operative and Mechanical Dentistry?

(4) National types of Teeth.

(5) What materials are best for filling and preserving the teeth between the ages of twelve and fourteen ?

I hope to render you a good account of European opinion on these subjects.

As far as Germany is concerned the profession is represented by various societies.

Central Verein Deutscher Zahnarzte—

Gesellschaft Berliner Zahnarzte—

also societies in Frankfort a Main—Austria and Schleswig Holstein—these hold their meetings I believe annually. The American dentist excels in operating over his Continental colleague for the reason mentioned, but as mechanical workmen they can fully compete with their American bretheren. I have seen plate work of the highest standard, that had been in use for years, and showing skill equal to that of more modern date.

Still rubber has, as in the States, worked its évil influences upon the character of mechanical dentistry, and plate work (gold, etc.) by the many, may be considered a lost art—rubber, rubber, whole sets and partial, is the order of the day and at prices equal to the $8.00 sets of the celebrated American avenue men, and the reasons therefor are the same as those which cast a slur on the profession, even in the land of its fruition, the competition of merely mechanical men, who offer the public by every means in their power, swindling advertisements, etc., the benefits of cheap dentistry.

Fillings are made of Gold, Tin, Amalgam and the plastic preparations, the two latter being used to an extensive degree, and consequent detriment of many organs, capable of being well preserved through nobler manipulation.

Practical education is not alone necessary for the majority of German dentists, but also for the patients who are not universally elevated to the proper appreciation of artistic dentistry, who accustomed to submit to an operation which may necessarily occupy from one to three hours duration, and finally reward with a corresponding remuneration; the only exceptions being the highest circle of society who really do take an interest in conservative dentistry. American dentistry has to struggle against the evil effect of cheap and consequently quick and imperfect work, the victimized becoming obstinate disbelievers in the worth of operative work, until the prejudice has been fairly eradicated by the lasting influences of some good conservative practitioner. Amalgam plays the greatest role amongst filling materials, and no wonder, for when the large majority are not educated to a proper remuneration the class of work must correspondingly balance the scale.

American dentists as educated operators receive the highest return for their labor, and are really appreciated when once their name and worth are known and spread through their abilities. That there are native professional men of the highest capacity, whose services are highly thought of there is no doubt, but they are in a minority to those, whose operations are not worth the small fees paid for them.

That the great question of dental education is causing thought in Europe as well as in America, the following article will prove to your readers—and probably will give a better idea of dentistry in Germany—than anything I could indite; for published in the German quarterly, edited by Dr. RobBaume, of Berlin—the organ of the Central German Society, it is a thoroughly German expression. I will translate it as literally as possible.

THE DENTAL TUITION QUESTION.—*By Dr. G. von Langsdorff.*—It is exhilarating to read, how on this and the other side of the ocean the question of elevating our dental standing, through bringing up qualified—that means theoretically practical educated Dentists, has become a subject for general earnest counsel.

For example, it is very easily said: *Only proper and able schools of culture meet our aim—or a gymnasial education as a ground work must be present;—or Dental sur-*

gery must be practised before all as a specialty; or a dental candidate must be as fully capable of passing his medical and surgical examinations as his dental; and such like.

By reading and after thought over all there remain various propositions. I have formed by degrees the following code for dental education, which I now place before my readers.

I believe I can make my opinion clearest, when I undertake to throw light on the education question from *negative and positive* sides.

(1) The negative side—that is how Dentists should not be brought up, is now-a-days undoubtedly the universal method.

We can presume that we have in Germany, at least a thousand practitioners, officiating as Dentists, that are carrying out the duties that can be claimed from a regular Dentist. Where have the majority of these thousand received their education? Answer: Through having been one or more years with Dentists who for some few hundred shillings have taught them the most needful of that they themselves know.

Or, they are those who having worked here and there as Mechanics for Dentists, have gradually flattered themselves into the belief of their capability to practise self dependently the same business. Through power of the law which gives liberty of exercising any craft, (Gewerbe freiheit) they are allowed to make artificial sets; and as they stand under no control whatever so they extract and fill teeth and perform all other oral operations, as if they were *qualified Dentists*—with the only difference that they do not call themselves *Dentists*—but * *Tooth mechinists—Tooth practitioners—Tooth Artists—Technical dentist*, etc. This is then the class or "colleagues" through whom our calling is so much discredited: for these persons spoil and extract more teeth than they can ever be answerable for.

Or, there are Barber surgeons—Chemists—Apothecaries,

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* **Tahntechniker—Tahnpractikant—Tahnkinstler—Techniker Tahnarz.**

—Watchmakers—Goldsmiths and other tradesmen who appropriate so far as they consider needful the technical work, * then practise every thing connected with the dental department. Solitary cases where persons have raised themselves through inate energy and assiduity must be regarded as exceptional.

Or again, there are medical students and even medical men who all at once get the idea into their heads to practise dentistry.—To make a rubber set of Teeth is soon learnt and that accomplished, they flatter themselves they are first class dentists. They are probably not in a position to faultlessly perform the simplest gold filling and yet they condescendingly look down on their colleagues, write themselves † Dr. of medicine—Medical practitioner and Dental practitioner—often with the addition Professor or Teacher and Examiner; although they hardly have a conception of the different diseases of the Teeth or what remedies to have recourse to.

Many a one, through need, qualifies himself by reading practical and instructive guides or impelled by native integrity seeks good counsel from Dentists of known reputation, but the wished for information is either not imparted in the proper manner, or so miserably and unmethodically that they comparatively, become only competent through their own energy and industry.

The main point however, *the preservation of the Teeth* through solid and lasting fillings, one can only learn under a *capable instructor*, to be perfected by the opportunities of practice.

If I could show the letters I receive, which ever increase in number, as examples (and I am sure I must consider them as such,) it grieves me sorely that our schools for instruction fail in assisting such active assidnity. I have indeed on three occasions, when the parties had advanced to the second class in the gymnasium, accepted such as pupils; but when they had learned how to treat painful Teeth and then fill them with the different materials employed, to extirpate a nerve—to extract Teeth—to adjust Pivot Teeth—to take impressions and make Rubber work, etc., yet I have mentally felt that of *fundamental solidity* there could be no question, for Anatomy, Physiology, Analytic Enquiry and Microscopy could only be conversationally dwelt on and that without any preceding preparation.—It was imperfect, just piece work.

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* **Dr. med—Praktischer Arzt. Praktischer Tahnarzt.**

† **In the German titles of Dr. they general precede the word Artz with praklisch—meaning practising his profession.**

Fundamental solidity can only be acquired at an educational institution where the various branches can be inculcated *theoretically and practically*, by teachers who have devoted their time to the study of their particular departments.

We have, it is true, in Germany dental teachers, but no proper Institutions where a dentist can be theoretically and practically educated.

It is therefore for this reason that he who has the stimulus to accomplish something as a Dental practitioner, spares neither the time nor money necessary,—to receive in one of the eleven Dental Colleges of the United States, the educational culture he lacks. I know this, for I have frequently been applied to by such energetic young colleagues for letters of introduction.

Who will not find in these facts the surest evidence that our German Dental Schools cannot satiate that thirst for knowledge which the dental candidate expects? The majority even of these return after a half year's sojourn at an American Dental College * as *perfect dental operators*, for treating diseases of the teeth as well as filling them with gold.

(2) The *positive side* of how to bring up Dentists, I find much more difficult to treat, for even in America, the land of dental nurseries, the Reformers have not as yet discov-

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* Notice that this verifies my statement in the commencement of this paper. W. R. P.

ered the vital means of reaching their desire. Still the question should meet with an easier solution in Germany, as our excellent preparatory schools, viz. the Gymnasial, endows each with a well filled school bag that fits him for universal education, which is not the case in America, where many aspirants for medical as well as dental diplomas cannot even write correctly their own mother tongue.

Consequently, with us, Jewelers, Watch makers and such tradesmen should only be permitted to enter a dental educational institution when through attendance at a Gymnasium, (high school) they by the study of Latin could prove a scientifical ground work. To adhere to this in all cases might prove for one aspirant or another very inconvenient, but, a rule must exist and exceptions to every rule are admissable.

That the code of a *scientific ground work* must be adhered to is proven by the facts—that the best works written on general and special subjects of Dental science do not emanate from the Mechanical dentists, etc. but principally from qualified Dentists and then medical men and surgeons, with fundamental medical education.—It consequently follows that, a *foundational, scientifical, medical education is beyond every thing necessary, if we wish to be regarded not as superficial but as Dentists of sterling worth.*

But a farther important question is the following. Is one, who as a Dentist can write a very scientific production, also a practical Dentist? No. For he may not understand how to perform lasting operations through proper solid fillings.

He who wishes to gain celebrity as a Dental practitioner must add to his scientific knowledge, the manipulation and dexterous skill necessary to make faultless Gold fillings, otherwise he will ruin more teeth than he can conscientiously answer for, and does not earn the right to call himself a Dental practitioner—but to learn this; before all, comes the need of *establishing independent practical educational institutions for Dentists;*—where able technical instruction, necessary to the proper manipulation of difficult cavities, can be imparted. The large number of enquiries, that I receive, in which honorable practitioners admit their lack of skill and pray to be informed where and how the defect can be remedied, is to me the best proof that in none of our existing German schools, wherein lectures on "*all departments of Dentistry*" are held, do we possess the proper instructors for Operative work or filling Teeth. What avails the person who wishes to educate himself for practise, that he has so thoroughly studied the Anatomy, Physiology, Microscopy and Therapeutics of the Teeth, so as to teach and write books on these branches; when it becomes the question of preserving a painful, carious tooth, knows naught but how to apply a palliative remedy—order a leech—pressing a gutta-percha or amalgam filling, or extract that which treated by an able practitioner could be probably still retained for 10 to 20 years. Our *dental specialty* embraces such an extensive field that in establishing an Institution, six professors at the very least are absolutely necessary.

The writer then advances the branches necessary and what apertains to the department of each chair, which results in:

1 Anatomy and Physiology.
2 Chemistry and Metallurgy.
3 Dental Pathology and Therapeutics.
4 General and Oral Surgery.
5 Practical course of Operative Dentistry.
6 Mechanical Dentistry,

in their varied relations to general practice, dwelling on the advantages of clinical demonstration—in fact the curriculum is similar to that of the U. S. Dental colleges—if any thing embracing a wider field. This is to be preceded by what we would term a high school education—would suffice for a commencement and be sure to bear good fruit; but he would not stop here. Later when the system would be firmly established, higher ground still should be taken and the candidate be required to be an M. D. before he became a D. D. S.—He then dives into ways and means, favoring connections with medical colleges, for the beginning. I have given the pith of his words, which express the feelings of the educated Dentist of Europe. Progress is up in arms and let us hope, that the strong hand of education may speedily stamp out the evil effects of charlatanism.—*Canada Jour. of Dental Science.*

ARTICLE III.

Remarks by Prof. Huxley,

At the Distribution of Prizes to the Students of the London School of Dental Surgery.

We print these remarks of Prof. Huxley because they are characterized by that rare good sense which we would *a priori* expect from one who enjoys so enviable and world-wide a reputation as a scientist, a scholar and an educator, and also because these views are directly at variance with views which sometimes have been published in dental journals of this country, but which, I am happy to be able to state, are held but by very few of those whose opinions are worthy of any particular attention. We are admonished also by these remarks of Prof. Huxley's that the dental profession of Great Britain is making rapid strides in establishing dental colleges and providing educational facilities for students; and from present appearances we must conclude that our boasted superiority in dentistry will not long be retained:

Ladies and Gentlemen: The ordinary duties of a person in my position have been lightened to-day by a practice, which in the interests of chairmen in general I should like to see made universal, of committing the statement of the merits of the various gentlemen who have distinguished themselves in their studies to their teachers and to other persons who are eminent in the departments of knowledge in which they have won so much credit. They have had that which is said to be the highest form of praise—the praise of men who are themselves worthy of praise; and we have all wished them that success in their future career which is inevitable, if they pursue their calling in life with the same diligence and energy and single-minded sincerity of purpose as has characterized their student life. There remains, therefore, one would almost think, nothing for me to do; and I wish that I could take that view of my functions, because then I should, for once in my life, feel perfectly confident that I should discharge my duties successfully. But I observe that on the programme of arrangements it is said that I shall give an "address"—far too formal a title, let me say, for the few words which I shall have the honor of placing before you: and I must undertake that task with as much brevity as is consistent with saying what I wish to say. The speakers who have gone before me have very justly and rightly enlarged upon the great importance to all of us of that branch of the medical profession which is taught in the London School of Dental Surgery. In fact, the teeth reminds us of their existence throughout the whole seven ages of man's life; the "mewling and puking in the nurse's arms" being not unfrequently referable to coming teeth, and the precipitation of that last stage—of the finale of it at least—which Shakespeare characterizes as "sans eyes, sans teeth, sans everything," being often directly aided by their absence. It would be hard to say in our present state of civilization, and apparently even in times before civilization, how large a share in the welfare and misery of mankind has been played by these organs, which remind one of some kinds of friends who are always plaguing us while they live and whose real merits and value only become perfectly clear when they have departed. Hence it is that I can understand why so large a proportion of the general public should have made its appearance at the meeting to-day, for undoubtedly there are few professions in which the general public has so direct and so immediate an interest as in that accomplishment which is promoted by such institutions as those to which the students whose merits you have seen recognized to-day belong.

I made it my business to-day to pay a hasty visit—I am sorry to say too hasty a one—to the London School of Dental Surgery. I saw busily carried out those operations of which most of us think with a certain shudder, unless we recollect perhaps that it is almost worth the pain of having a tooth out, to know the extreme bliss of having got rid of the toothache. (Laughter.) I visited what corresponds with the wards in other hospitals and saw the array of those wonderful chairs which takes the place of beds in ordinary hospitals; I examined the excellent lecture room and the museum in which the student can acquaint himself with the forms of healthy and of diseased teeth. I observed there with some surprise, for the moment, skulls of hippopotamuses and skulls of rhinoceroses which I thought were rather more in my way than in that of the Dental Hospital, and I had for an instant a kind of vague feeling that the skill of the modern Dentist had now extended so far that, like the ancient Alexander, he sighed for new worlds to conquer, and leaving the grinders of man had betaken himself to the tusks of the hippopotamus and the molars of the elephant. But I learnt subsequently that these preparations were for the illustration of that valuable part of the instruction in the Dental College which my friend Professor Flower alluded to just now as being given by Mr. Tomes. And there was one very curious specimen in the museum which I will mention to you, as indicating in a rough way the enormous progress which has been made during the last century in medical science and in medical art, as in all other arts and sciences. In an obscure corner of the museum—too obscure, in fact—I saw a piece of wood having upon it this inscription: "Thomas Smith lets blood, draws teeth, handles teakittles." That led one back, ladies and gentlemen, to a state of the profession of Dentists which corresponded, in comparison with its present state of complication, with the time of the men with stone implements as compared with those vast armaments with which two great nations are now preparing to decimate one another; and the enormous interval between the rude apparatus by which Thomas Smith performed his operations and the exquisitely skillful appliances by which the modern operations of Dentistry are performed, will give you some impression of the amount of study and of knowledge which is required at the hands of the modern practitioner of Dentistry—of that amount of study and of knowledge the means of pursuing and acquiring of which are so amply and so well given in the School of Dental Surgery of London. It has been remarked by a previous speaker that the art of the Dentist, although confined to one particular set of organs in the human body, must necessarily extend over the rest of the bodily frame, inasmuch as those troublesome organs, the teeth, being part of the living organism, and themselves alive, are inseparably connected with all other parts of the body, and act upon them and react upon them; so that no man can hope to be an intelligent or, indeed, a competent practitioner of the Dental branch of the medical profession who has not a good and sufficient grounding in general medicine and in general surgery. Without that he must needs be an empiric in the worst sense, inasmuch as he will be meddling with a complicated machine the work of which he does not in the slightest degree comprehend. But the slightest attention to modern Dentistry must show that this branch of the medical profession is, in a very strict sense, a specialty. I do not merely mean to say that it is a specialty in the sense in which the treatment of this, that, or the other internal organ may be a specialty, but it is a specialty in an even more perfect sense than the treatment of the diseases of the eye is a specialty. I mean that for its successful practice it requires an amount of technical knowledge and of skill in the use of appliances which can only be gained by a special and peculiar training, so that those who look, as the founders of the School of Dental Surgery have done, at that liberalization of the profession which consists in making a man thoroughly know what he is about, have very rightly discriminated the two elements in the education which is to be given, one of them what we may call the general medical element, the other element special to this particular branch of the profession. The means of obtaining general medical education are abundant and are to be met with in the numerous medical schools which are scattered over London; and, therefore, very wisely, as I venture to think, the founders of this school did not propose to include into that instruction the general medical and surgical teaching which could be better got elsewhere in connection with the great hospitals And they refer their students to these great hospitals for such instruction as is required, But, on the other hand they have considered—and here, again, I cannot but think wisely—that it would be quite impossible, or at least that it would be very hard for hospitals devoted to general purposes to be expected to possess the many special appliances which are needed for instruction in the technical part of the Dentist's craft. And therefore they tell their students to acquire their general knowledge where it is best to be acquired, and then to come to this special school of Dental Surgery for the purpose of obtaining that special and peculiar kind of knowledge which is not to be had elsewhere. It does not appear to me that that seems a very sensible and wise recognition of the principle of the division of labor. I would beg you to remark that in doing this the founders of this school have not had the mistaken idea of separating the profession of the Dental Surgeon from other branches of the medical profession. They require of their students, in the first place, the common elements of the education of an enlightened man. The preliminary examinations, as I understand, are common to their curriculum and that of the Royal College of Surgeons. In the second place, as I have said, they require a knowledge of general medicine and general surgery—without wasting the time of their students by carrying them into branches of study which can have no direct bearing upon their future career. And then, finally—and herein I think the wisdom of their arrangements is particularly shown—they do insist that the man who calls himself a Dental Surgeon—who has the diploma and the qualification for the practice of Dental Surgery, shall show by the length of time under which he has undergone instruction, by the courses through which he has passed, and finally by the results of examination, that he really does know that particular business. It so happens, ladies and gentlemen, that I have had at various times to express opinions respecting professional education. It has been my lot to serve on various commissions, university and other and to be obliged to acquaint myself somewhat carefully with what is doing in these matters, and I have heard a great deal of talk about what is called a liberal education. There is no man who has greater respect for a liberal education, in the proper sense of the word, than I have. There is no one who can have less inclination to despise any form of knowledge whatever. But another consideration has been very strongly forced upon me; that is, that in the conditions of life in this country, in the midst of the constant driving and pressure which is put upon all men and especially now-a-days upon young men, the persons who are entering a profession can only give a certain limited time to their pursuits, and that if they are to be made competent, if they are really to know what they are supposed to know, you must limit that which you require from them, and you must concentrate their energies upon those studies which it is absolutely needful for them to have well in hand. If not you may get very accomplished men—very versatile persons, but they will not have that confidence of their patients which is the foundation of all sound living in any profession whatever. They may be very liberally educated persons, but they will not bo good practitioners, and I do hold that the first clear moral duty which every man who sets himself up before the public as able to do a certain thing has laid upon him is, that he shall be able to do that thing whether he can do anything else or not. Now, it is exactly upon that ground that I venture to think that the London School of Dental Surgery commends itself to our best wishes and to our warmest sympathies. By its regulations, the school does its best to secure that the members of the profession shall be cultivated persons, with the sort of sympathies with their patients and with their fellow-creatures in general which are alone to be gained by some elements of liberal culture. In the next place, it secures their having that general knowledge of medicine and surgery, to which I have referred as being absolutely essential to the intelligent practice of their profession ; and, in the third place, by that thorough practical training—that complete discipline in the actual work of their calling—which the students have the great advantage of obtaining in the hospital, they do their best to secure that the practitioner, when he leaves them shall be, in the best sense of the word, a liberally educated man, that is to say, a man who can honestly do the thing which he undertakes to do. I do not think, ladies and gentlemen, that I need detain you any longer. We have wished all prosperity to those gentlemen whose merits have been placed before us, and I think we should conclude with a hearty expression of good will towards, and good wishes for the prosperity of, an institution which is capable of yielding such admirable results.—*British Journal of Dental Science.*

ARTICLE IV.

Plastic Fillings.

Read before the Connecticut Valley Dental Association, June 13, by Dr. C. L. Anderson, of Springfield, Mass.

The remarks about to be offered on this subject are not intended to be exhaustive in their discussion of the theme, but merely to present some of the more salient points which are engaging the minds of men eminent in the profession, and which may serve as a nucleus for profitable discussion and thought in unoccupied hours.

Jewelry to adorn the human form divine is now at this advanced stage of civilization considered a necessity, but the idea seems to be growing on the abler men of our profession that its display in the mouths of our patients is not so imperatively demanded; and that notwithstanding the strides that dental science and art have made, we as yet lack that without which we cannot claim for ourselves any reasonable proximity to success, as far as our means for accomplishing the chief ends of dentistry are concerned—that of the preservation of the natural teeth intact, or nearly so—which calls for a material that shall subserve the office of a preserver, and not at the same time direct attention to the fact that tooth structure is lost, and has been replaced by an artificial substitute.

Therefore it is to be regretted that the material most frequently made use of for this purpose is on many accounts a most objectionable one. Besides its appearance, gold is undesirable from the fact of the extreme danger of insertion in many teeth on account of their frailty, and in others of a peculiar construction, to the preservation of which gold seems inimical. Besides, there is a large class of patients who cannot bear the suffering and tedium attendant upon the insertion of gold plugs; the more refined the practice, the larger in proportion will this class of patients be, and consequently the higher the skill demanded of the operator. The higher the mental development, the more susceptible to nervous influence is the organism.

Electro-galvanic action between tooth structure and filling materials, is at present a mooted theme as regards the extent of the action and the degree of injury resulting; but that there is such a thing I think no scientific dentist will deny, for to many minds there are phenomena which are unexplainable except with this hypothesis, and others which point directly to this force as a disturbing element to success. Experiments made with a view of determining the *truth*, establish beyond the shadow of a doubt the *fact*, and the future will probably reveal the extent of its operations.

As the result of these experiments, gold and dentine present the strongest intensity of action, accompanied with the greatest deviation of the galvanometer.

As the result of methodically kept records, extending five, ten, fifteen, and even twenty and thirty years back, among other valuable facts, one in regard to gold has been adduced —that there are many teeth in which gold has been inserted in the most skilled manner, not once but two or three times, and these plugs have as often failed without the slightest indication of decay; simply becoming loose and dropping out, or loosened by brushing or some equally harmless cause. In other teeth plugs fail which have the greatest care bestowed on their insertion and after treatment, and no reason, to many minds, seems assignable. The lateral incisor is a striking example of this fact. As these and other facts are becoming more and more evident, the conscientious practitioner begins to anxiously peer into the pregnant future, to glean, if he may, something which shall lead him to the goal where lies a material for plugging teeth, which shall possess, not only the requisite impermeability, indestructibility, adaptability; resistance to mechanical, medicinal and chemical action, but also the proper color, and whose working qualities shall not demand for a perfect plug the tedious and often painful operations that gold does.

Along with the conviction that is so rapidly gaining ground that soft, non-cohesive gold, is, on many accounts, superior to the cohesive form, comes the candid confession that we need an easily manipulated permanent natural appearing material for the better practice of our profession, and the furtherance of its truest interest.

It must be evident that the necessity exists, and as "necessity is the mother of invention," we may hope and expect that some important advance will be made, even if the goal is not reached in our day.

A few words as to the materials most used in a plastic form, and the modes of their manipulation:

Amalgam, our professional Hydra, is probably the most used and misused material we have; but in its best forms it fills a place no other can, and without it many crownless roots would have been extracted, instead of doing valuable service in mouths, where, although perhaps hastily placed, it has outlasted many elegant gold fillings.

From experiments it has been found that the proper mode is to weigh our amalgams, having the mercury in one pan of the scales a little in excess of the ground mixture in the other. We determine the amount of mercury by the size of the cavity or cavities to be filled, taking enough to about fill one-half the required space. After weighing comes the mixing, and a small mortar (Fletcher's is excellent) is the most convenient and rapid mode; besides the discoloration of the skin, and a suspicion of uncleanliness suggested to the patient by mixing in the palm, there is a possible danger of some constitutional effects from its prolonged practice.

Have the cavity perfectly dry, a very important condition of success. Hold the amalgam in one hand, working with the other, thus keeping it at a proper temperature (same as the tooth,) preserving its working qualities much longer. Always *tap*, never *rub* in, plastic fillings of any kind, so that the plug shall be uniform. When the cavity is all but filled, take the surplus amalgam and squeeze out the mercury, so as to make it very dry, and use this "bottom" to end off with, tapping in thoroughly to draw out the mercury; then finish off, for which purpose a pair of pliers and small pieces of spunk are admirable. The mercury may be squeezed out between the fingers, or in a chamois with a pair of smooth, flat-nozed pliers. Washing, and *preliminary* squeezing are detrimental, and the proportions given indicate the proper mixture to obtain the best working qualities. In extensive building, a little more plasticity is not objectionable. When sufficiently hard all amalgam fillings should be finished off the same as gold, with pumice, etc.

The use of amalgams is of course limited to the molars and bicuspids; for the incisors two materials are admissible, —gutta-percha and the oxy-chloride of zinc. Of the two gutta-percha is by far the most desirable, and its merits as a perserver of bad teeth are not nearly so well appreciated as they should be.

Take any tooth, decayed on any surface except the masticating where a good gold plug has failed, and try gutta-percha and await the result. It will often outlast the gold and if it shows signs of failure, it is easily removed and replaced, without any extensive excavations and with very little of the trouble and expense attendant upon the re-insertion of gold. It is nearer the color of the tooth, and often matches so perfectly that its presence is not detected. The fact that gutta-percha is in many instances a permanent plug has been proved. The poorer in structure the teeth, more satisfactory the result, when compared with that obtained by the use of gold. The best form at present is Johnston's "Premium Stopping" (N. Y.;) it approaches nearer to the old forms of gutta-percha which proved so reliable. When used it should be cut in small pieces and warmed over wet, not dry heat. Dry heat distroys its toughness and working qualities. It should be heated until in a semi-pasty condition, and inserted with warm, not hot instruments, and very neatly finished down with no over-lapped edges to "ruff" up and present lodgments for food and invite decay.

At the present time oxy-chlorides are receiving considerable attention and vigorous efforts are instituted to bring them in a more durable form. Like amalgam their names are out legion. Fletcher's seems to be peculiarly adapted to capping pulps,* and in this connection the practice of filling root canals with this material should be condemned as likely to cause alveolar necrosis by sleeping out, especially in lower teeth. Poulson's German Cement is much better

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*Dr. A. has evidently confounded Fletcher's White Enamel with Fletcher's Artificial Dentine. The former is an oxy-chloride and could scarcely be used for "capping pulps;" while the latter contains no chloride, and consequently is perfectly free from irritant action.—EDITOR. —*Dental Advertiser*.

than Cement Plombe for general use. If one fact could be definitely determined, the usefulness of this material would be much enhanced: In what mouths does oxy-chloride of zinc stand the best? As long as this is not known we must write " unreliable " as our verdict. When it does stand, it is *ne plus ultra*; but when it fails it melts like ice.

As an outgrowth of the movement to bring it out in a more enduring form, comes the "talcking method," so called. The principle of this is surface hardness produced by the use of French chalk in a heated state, and rubbed for a length of time over the face of the filling. Fillings inserted in this manner give promise of good results, but more time is necessary to test it thoroughly. It starts off well, and we may cherish the hope that it is a step in the advance for which we are looking.

And now that the necessity of some durable plastic filling material is acknowledged, and that we have already material which properly used can be made of great service, let us make a fair trial of them and so help towards the grand result! We do not want to rush blindly into this matter, and by our zeal destroy the force of our efforts, but *judgment* is demanded in this as in all departments of the " healing art."—*Dental Advertiser.*

ARTICLE V.

Alveolar Abscess.

BY J. A. TURNER.

Read before the Indiana State Dental Society.

The frequency of this affection renders it one of great importance to the dentist. It has received the earnest consideration of the dental profession for many years.

I do not now expect nor aim to present anything new upon the subject, but rather to direct the attention to the old and reliable methods that have been proved.

That an alveolar abscess can form and continue in a state of considerable activity, and that without causing pain or discomfort, especially after its formation, sometimes for years, is a very interesting fact, one which, if well studied, will teach an important lesson.

First, then, we shall take the ground that there can be no permanent results attained in the cure of alveolar abscess until we can control the patient. If the only questions were, "can I treat locally an alveolar abscess, and save the tooth to years of usefulness?" it were a simple question and easily answered. But this would be stopping short of our goal, and would degrade dentistry to a level with the tinner and gunsmith, with nothing to do but to mend and patch, and patch and mend.

In order to control patients, we should have the broadest knowledge of our profession possible, taking in all that the general practitioner of medicine is supposed to know, and also possess a liberal knowledge of our specialty. If we wanted to set bounds to this condition, (disease) we should say to the scrofulous parent: "Stop propagating your kind in the world." To the syphilitic parents, that you stop bringing into this bright, beautiful world, offspring that will be very susceptible to many of the worst ills that flesh is heir to, and so on through the catalogue. It would be an exception, I was going to say an anomoly to see parents with some such diatheses, bring forth children whose teeth would be perfect and able to resist the encroachments of decay, and so the occurrence of abscess.

We talk sometimes loudly about graham flour, and beans and potatoes, and go through a long list of dietary articles, which our patients should use, and we do well, for these are quite as necessary as that, after the boiler is built there should be the application of water and fuel, that it may be made to drive the engine and so fill its mission. But you see how trifling it would be to pay little or no attention to the building of the boiler, and merely lay in a good supply of first-class fuel and plenty of water, when perhaps the first time any great strain were made upon it, it would give away and utterly fail. We can no more expect to cure this condition by dietary and habits of life, where the seeds of disease are shown by parents, than you could to make the boiler fill its mission by the best of bituminuous coal, and the purest of rain water. I am not claiming now that individual cases cannot be cured. One swallow does not make a summer, and the cure of an individual case does not prevent the next one. This is not getting down to a hard pan. This would not be digging to a solid foundation and raising a substantial structure. Like father like child. Like begets like. A law that approaches the Medes and Persians in its unbending and unyielding nature. If these premises then be correct, we cannot long remain in doubt as to the cure. It may be true that if a sound and healthy person were compelled to reside in a malarious country upon unwholesome food, scantily doled out, he would soon deteriorate. But these are extraneous causes and not the causes *per se.* Two hundred years ago, when French missionaries were trying to win the nations of our soil to become French, they were struck by the muscular developments and robust constitutions of both male and female. Indeed there were no cripples, no sick, no diseased. Why? Because the savage life required warriors and men and women who could endure fatigue and hardships, and when one became crippled or deformed or sick, they were left in the wilderness to starve and die, so the timber of which they were built stopped with them.

In the study of disease it is an argument against civilization that man is allowed to propagate his species, knowing that he will entail misery and bring ruin to his race by imparting the seeds of weakness and disease. He fills hospitals and poor houses and grave yards, and brings to an untimely end his own creation. There is but one compensation for all this, that it brings out the god like in our characters, and eleemosynary establishments and homes for the helpless are built and endowed by man.

As to the causes and cures of individual cases, we have enough food for careful reflection. Among the causes, we may maintain periostitis, or exposure of the pulp, forcing of cotton, gold, or the broken point of an instrument through the apex of the root, sudden stroke or blow to the tooth, thermal changes in cases of abrasion, and many others. Where the pus has not yet formed vents, it were best to open through root if possible, otherwise through gum. Too much care cannot be given to breaking up the sac and bringing about a healthy condition. Where apex of root is open sufficiently large, pumping is best.

It may be asked when the condition justifies filling? Most of our authors, I believe, say whenever the part has healed up. I think this unnecessarily prolongs the case without adding anything to the certainty of the result. I should say from experience, that whenever you can get a secretion from the part that resembles serum, or is even mixed with blood, finish your work. I have tried the various materials for filling the roots and find that none works so well as gold. In some cases the walls of the canals seem to be left in a hyper-sensitive condition and Os Artificial produces too much pain to be endured.

Hill's stopping I have never satisfied myself would not become softened, and so carried out in cases of fistulous openings through gums. Pack at apex, a pleget of cotton with carbolic acid or creosote and fill with gold, and you have the best filling possible known to us now.—*Dental Register.*

ARTICLE VI.

Chloroform and Ether in their Medico-Legal Relations.

Dr. A. M. Denig, (*Ohio Med. Recorder*, Jan., 1877) in an interesting paper before the Columbus Pathological Society, presents the consideration of chloroform and ether in their medico-legal relations, under the following three heads:

1. Can they be administered successfully to persons during natural sleep without awakening them?

2. Can they be forcibly administered for criminal purposes, in opposition to the will of the person to whom they are given?

3. Can a person give competent testimony as to what occurred during the anæsthetic state?

For convenience sake, he discusses them in reverse order, and arrives at the following conclusions:

1. In the third question, the person is supposed to take the anæsthetic voluntarily. Now the action of chloroform is divided into three stages—first, that in which the symptoms resemble alcoholic intoxication, in which the patient is often noisy and talkative and gives play to the emotions, etc. This stage is usually very short and rapidly passes into the second, in which the consciousness is wholly lost, and in which the patient lies passive and helpless. In the third case narcosis is profound, the breathing stertorous, muscular relaxation extreme, and complete abrogation of all reflex actions. Every one who is at all acquainted with the phenomena excited by chloroform and ether knows that there is a time during the first stage of the intoxication in which pain is nearly or quite abolished, and yet the consciousness of the patient is almost intact. At no time during this stage, however, is there a complete abolition of the power of volition; the patient is not deprived of the power of resistance, and they will frequently tell you that they were entirely conscious of all that transpired, and yet felt little or no pain if any operative procedures had then been made. Therefore there was a voluntary act of the will in allowing the operation to proceed, with a perfect consciousness of the fact that they could have prevented it had they so desired. Now if, during this time, any criminal act takes place, a passive, unresisting submission would imply her entire acquiescence in the act, and make her "*participio criminis.*" But, when the power of resistance or outcry is abolished, the consciousness of a real motive for it is lost also. If, now, an outrage be perpetrated or attempted on a woman, she cannot be aware at the time of

the liberty which is being taken with her person, and her statements should be entirely repudiated as either the product of her imagination or a deliberate and wicked misrepresentation for sinister and selfish purposes.

2. Can chloroform be administered forcibly? Ordinary experience in the administration of anæsthetics teaches us that none of those articles can be forcibly administered with felonious intent without the exercise of a force sufficient to accomplish the robbery or other contemplated crime without resorting to their use, and that, when such an allegation has been made, a careful examination of the facts will unequivocally prove a collusion between the parties—the assailants and the assailed.

3. Can chloroform be administered during sleep? Besides a number of successful cases scattered through the medical journals, the first systematic experiments made to answer this question are those of M. Dolbean, surgeon of Beaujon Hospital, Paris. Three different series of attempts were made by him, assisted by his "internes," and from his account it is obvious that the more the experimenters became familiar with the "*modus faciendi*" the number of persons successfully anæsthetized proportionately augmented; at first it was one in four, then two in six, then six in nine.

The experiments were made publicly, in the surgical wards, upon patients of all ages, and twelve M. of chloroform were given at a time upon a napkin, held some distance from the person's face. As out of the twenty-nine subjects on which these experiments were tried ten—more than one-third—were successfully anæsthetized, we may say that it is difficult, but it is certainly possible, to render a person insensible by the use of chloroform vapor administered during sleep. Accordingly, the expert must, in justice, declare that it is possible, if it is not easy, to render a person insensible by chloroform during a natural sleep, in order that he may be made the victim of a criminal assault.—*Detroit Med. Journal.*

EDITORIAL, ETC.

Letter from Oakland, Md.—

OAKLAND, MD., AUGUST 14, 1877.

My Dear Dr.—I left you on yesterday, with a promise that I would make a note of whatever was of interest at the Joint Dental Convention, convening at this place to-day, and I now try to redeem that promise so far as I am able, premising that, as I have been up o'nights, and have enough malarial fever to make all my bones ache and my head to swim, you will not expect a great deal.

Your readers will all understand that three distinct Conventions or Associations were appointed to meet here: The American Dental Convention, Southern Dental Association, and the Maryland and District of Columbia Dental Society, and that the gathering partakes more of the nature (to use the language of Dr. Atkinson,) of a "mass meeting" than of a more regular organization.

The American Dental Convention was the original organization that gave birth to the American Dental Association, and which has still existed, its offspring meantime outstripping it in growth and in the interest which clusters around it, and whose members as a whole, deem the parent body, if not obsolete, at least of undesirable existence. The American Dental Convention on the other hand, holding its original organization intact and separate ; and a spirit of something akin to jealousy is plainly apparent in the attitudes of both, the original body languishing somewhat, the junior organization strong and vigorous.

The Southern Dental Association, your readers are familiar with. Organized at a time when such a union of the Dentists of the South seemed desirable, when sectional feeling north of the Potomac made it uncomfortable for Southern men to witness the exaggerations of loyalty which were naturally manifested by the victors in so fierce a struggle, the first few meetings of this body were equal in point of strength and talent to any gatherings of the sort in the land. For several years the interest seemed unabated, but lately, the wide area over which the membership were scattered, the difficulties and cost of travel, and above all the growing poverty of our Southern States have caused a falling off in the membership, until for the past two or three years no quorum has been in attendance. The Annual Meeting that was to have convened in Montgomery, Ala., in May last, was adjourned at the instance of the executive committee, to meet at this place and time in conjunction with the above named associations.

The Maryland and District of Columbia Society, is a comparatively new organization, and includes among its members a number of the Dentists of Baltimore and Washington, and seems complete and compact in its organization and of very fair working quality.

The American Dental Convention is presided over by Dr. W. H. Atkinson, of N. Y., so well known as to need no introduction; the Southern Association by Dr. Arthur C. Ford, of Atlanta, Ga., Vice President of that Association, and the Maryland and District of Columbia Society, by Dr. R. Finley Hunt, of Washington, D. C.

The three bodies meet together in one building, and in joint session, are permitted to debate most questions which arise in any of the societies, and most are members of each and all the bodies.

Dr. Atkinson is usually the presiding officer, and I may add, the master spirit of the meeting; "the lungs of the affair," so one member said, but this was hardly fair of the good doctor, who whatever else may be said of him, can state a question with as much clearness and perspicuity as any one, and who presides with a great deal of fairness, justness and good temper. If the organization of all of our brains is not such as to follow the Dr. through his convoluted sentences to their terminations it is perhaps our misfortune.

I am pained to see no greater number in attendance than I do here. Of the far Southern men, I see only Ford and Whittaker, of Ga., and Walker, of La; from Virginia, Steele, and Mahoney of Richmond; while some eight or ten from Washington, D. C., and as many from Baltimore, with a sprinkling from Maryland, outside of Baltimore, and a few from Pittsburg and also Prof. J. Taft, of Cincinnati, make up the attendance—in all about thirty. This is the first day however, and to-morrow it is expected that a larger number will appear.

We are here 2700 feet above tide water, in the heart of the Alleghanies—a delightful resort.

The business of the Joint Meeting was inaugurated by a brief address from Dr. Atkinson, setting forth the original aims of the American Dental Convention, the attempts at merging it into other Associations, the difficulties attending the efforts at establishing one great National Association, and the present status of the convention and its attitude toward its rival, the American Dental Association. He himself had accepted the position of President in the belief that something might be done in that capacity by him toward healing the breach, and making at least friendly terms between these antagonistic elements.

No other business was done on the morning of the first day, save the organizing of the bodies and this address, and at its conclusion the meeting adjourned until the afternoon

I notice among those in attendance, several gentlemen not dentists, who promise to appear conspicuously in the doings of this meeting,—Dr. S. Waterman, of N. Y., well-known as a spectroscopist, and Dr. Caldwell, of Baltimore, who has made electricity a specialty. Dr. Waterman has promised a paper, with illustrations, on the Spectroscope, which will be worth hearing, as it has special bearing on the subject of anæsthesia, and the changes wrought in the blood by these agents.

But as this preliminary letter is already long, I will stop.

H.

MONTHLY SUMMARY.

The Cold Bath in Infantile Diarrhœa.—This has long been known as a most efficacious measure, even in extremis. An Italian practitioner, Dr. Wocke, has lately been drawing attention to the same plan of treatment. He refers more particularly to the terrible epidemics of diarrhœa which prevail in summer. The epidemic is due, he says, in part to the deleterious influence of the elevated temperature on the infantile organism, and in part to the injurious effect which the heat exerts on the aliment, the milk, and the air inspired. For this state of things he recommends cold bathing, of which he has a high opinion. Wasting children, reduced by vomiting and diarrhœa, were as if regenerated by the second day after the baths were commenced. The restlessness disappeared; sleep was restored, the appetite increased, and the diarrhœa diminished. The cold baths act on the child as a tonic, and internal remedies then exert a better influence. Dr. Wocke commences his treatment with cold douches to the head and stomach; then passes to baths, commencing at a temperature of 26° C., and reducing them to 22.° Three baths a day are sufficient.—*Med. and Surg. Reporter.*

Carbolic Acid in Diarrhœa—A correspondent, Dr. S. W. Palmer, of Ohio, writes us;—Recently, I have employed carbolic acid in the treatment of diarrhœa, both acute and chronic form of the disease, with signal success. It is given in one or two drop doses, largely diluted with water, from two to four hours apart. It controls pain, and corrects the fetor of the discharges, and otherwise cures the disease. If severe pain be present, and the discharges profuse, opium and creta preparata, with astringents, may be alternated with it. But my experience is that carbolic acid in most cases is all that is required.—*Med. and Surg. Reporter.*

Croton Chloral in Dentistry.—Dr. C. I. Cleborne (*Medical Journal*) uses croton chloral as an internal and local anæsthetic in toothache. He has derived prompt relief from its use in 5-10 grain doses in the toothache of dyspepsia and pregnancy, and in those aggravating cases which occur in rheumatic and neuralgic patients. Failing to relieve by the ordinary remedies a severe attack of toothache, due to dental caries, I found that a mixture of equal parts of crystallized carbolic acid, croton chloral hydrate and solid Japanese oil of peppermint promptly removed the pain and obtunded all sensitiveness during the period of filling. In filling teeth, when it is not necessary nor expedient to destroy the pulp by arsenic or other escharotic, nearly all sensitiveness may be allayed, during the preparation of the cavity, by the following plan: Arm a fine brooch with a small ball of cotton wool, dip it into the mixture, removing any superfluous material by a little pressure: introduce it into the dental cavity and retain in position by the introduction of a small piece of wool. In the course of five or ten minutes the wool may be removed, and the excavation of the cavity may be proceeded with until it again becomes sensitive, when the application should be renewed, and repeated as often as it may be necessary until the cavity is ready for the filling; a result which may be accomplished with but little or no pain, and without injury to, or the destruction of the nerve.—*Journal of Materia Medica.*

Use of Tobacco by Students.—In the prospectus of the Berkeley Gymnasium, a preparatory school to the University of California, we find the following section on the use of tobacco. Imagine a "young gentleman" sitting down in the smoking room, with a cigar in his mouth, elated with the dignity of his position, and proud of the concession which his instructors have made to his desires, and at the same time contemplating this permissive act, particularly that part of it relating to the "clean and the unclean."

"It is a fact not to be overlooked that a great majority of our boys in California are given more or less to the use of tobacco. We do not defend this or any other species of intemperance. We believe it is destructive to both brain and body. Yet we deem it wise to deal with the matter as an *existing thing*, which it is. We do not believe that it is wholesome for the good morals of a young man to be sneaking around the buildings in quest of any opportunity that may be presented to absent himself from school grounds to practice in secret places or vicious companionship what he would be either afraid or ashamed to acknowledge to his best friends.

We shall therefore have a smoking room comfortably fitted up for the convenience of those students who are addicted to this habit; *but in all cases we must first have the written authority of parents or guardian.* Under no circumstances will a student be permitted to smoke more than once a day; namely, during the half hour immediately following dinner. It is our design in this to separate the clean from the unclean, and not allow the influence of tobacco smokers to be felt promiscuously upon young and susceptible pupils, as we are confident is often the case."—*Pacific Med. and Surg. Journal.*

Death from Anæsthetics.—A death recently occurred at the East Suffolk Hospital, (London,) during the administration of bichloride of methylene and ether for the removal of diseased bone from the leg of a patient, aged fifty-six, who was suffering from syphilitic caries. Death occurred during a convulsion. For some unexplained reason, the coroner forbade a post-mortem, and consequently the immediate cause of death was not ascertained.—*Med. Record.*

Polypus Growing from the Septum of the Nose.—A girl aged 15, had been troubled with obstruction of the left nostril and epistaxis for four months. This was found to be due to a pedunculated polypus growing from the septum. In January it was removed under chloroform, and now there is no sign of disease. Polypus growing from the septum is very rare; this one measured over half an inch by one third: it was very vascular, and ulcerated on the surface. Structurally, it consisted of a large number of vessels and adenoid tissue, with many lymph cells.—*British Med. Journal.*

India Rubber Cloth in Diseases of the Skin.—(*Virginia Clinical Record.*)—M. Hardy, of Paris, has now employed india-rubber cloth instead of poultices or local baths since 1868. It is composed of a layer of caoutchouc adherent to a piece of cotton, and forms an impermeable tissue. After a short time an abundant sweating takes place from the part enveloped, under the influence of which crusts and scales are loosened, the epidermis spreads over the ulcers, and the skin becomes softened. A very rapid modification of the skin takes place; two or three days of application suffice to completely clean a scalp covered with abundant scales of eczema, etc. After forty-eight hours, hands affected with chronic eczema, with fissures and cracks in all directions, become cicatrized, and the skin recovers its suppleness. The treatment is of particular value in the second stage of eczema. Oiled silk cannot take the place of the rubber cloth. This method is also serviceable in psoriasis and chronic lichen.—*Journal of Materia Medica.*

Apthæ.—Cupri sulphus is an excellent old-fashioned application in the severe forms of cancrum oris, apthous ulceration and gangreneous affections of the mouth. Symonds used five grains finely powdered and thoroughly incorporated in half an ounce of honey. It has also been applied in substance.—*Virginia Med. Monthly.*

Salicylic Acid Bad for Teeth.—M. Blandeau, of Paris, states that according to dentists, this agent has injurious effects of the teeth. English observers have noticed its effect on the bones, necrosis of the tibia has been assigned to its use. It evidently possesses considerable affinity for the calcareous salts of bone, and we see the urine loaded with lime salts in an ultra-physiological proportion, from the internal use of the acid. The salicylate of soda presents the same danger; and too much caution cannot be taken in the use of any salicylic preparation. —*Drug. Cir. and Chem. Gaz.*

Acidity of the Gastric Juice of Man.—Dr. Charles Richet read a paper before the French Academy Sciences recently, in which he treated of the acidity of the gastric juice in man. For some time Prof. Verneuil had a young patient under his care, who labored under the strange affection of having his œsophagus, or upper extremity of the alimentary canal, so contracted as to render the passage not only of food or drink, but even of an instrument quite impossible. The professor had recourse to gastrotomy, an operation until then considered mortal, but which in this case succeeded perfectly, An incision made in the stomach, and kept open artificially, has been transformed into a regular fistula, through which food and drink are administered, and in this state the young man not only lives, but is a useful servant to the hospital. Dr. Richet, having devoted particular attention to this subject, and having examined the workings of the stomach day by day, through the fistula in question, lately communicated the results obtained to the academy. They are as follows : [1.] The average acidity of gastric juice, whether pure or mixed with food, is equal to 1·7 grammes of hydrochloric acid per 1,000 of liquid. It has never been observed to be lower than 0-5 or higher than 32. [2.] The quantity of liquid contained in the stomach exercises no influences on its acidity, which remains nearly invariable, whether the stomach be empty or filled with aliment. [3.] Wine and alcohol increases the acidity of the stomach ; cane sugar diminishes it. [4.] If acid or alkaline liquors be injected, the gastric ones tend rapidly to resume their normal acidity, so that about an hour after the injection the stomach has regained its average acidity. [5.] The gastric juice is more acid during digestion than before or after. [6.] There is a slight increase of acidity toward the end of digestion. [7.] The sensations of hunger and thirst do not depend either on the state of acidity or that of vacuity of the stomach. Such are the results as to acidity, but there are a few others of some interest. Thus fecula, fat and meat stay in the stomach for three or four hours, milk is digested in the course of an hour and a half ; water and alcohol are absorbed much faster, in the course of from 35 to 45 minutes. Food is not transmitted to the pylorus successively, but all in a block.—*Druggists Circular.*

Lacto-Phosphate of Lime as a Tooth Filling.—The treatment of exposed dental pulps and sensitive dentine is the subject of an interesting paper by Junius E. Cravens, D. D, S. The lacto-phosphate of lime is applied to the exposed pulp, which is carefully sealed and left undisturbed for several weeks. On removing the coverings a new bone is found, its surface continuous with that of the formerly soft dentine, and the sensibility being even below the normal degree. Oxy-chloride of zinc and other substances, however, may produce like results.—*Med. Record.*

Therapeutic Use of Cold.—Cold may be employed in the form of ice, or ice poultices (made by mixing bits of ice with a linseed poultice,) or evaporating lotions, or irrigation. Cold acts through the vaso-motor nerves upon the capillaries, constringing and even emptying them of blood ; and this not merely in those capillaries immediately in contact, but owing to the dispersion of the nervous filaments, even at a considerable distance and thus renders the advent of congestion and inflammation physically difficult or even impossible. It should be used with some caution, as, if its action be kept up too long, it may destroy the vitality of a part, as happened lately in a case of femoral hernia, when after operating, I applied ice with a view to prevent peritonitis: this it achieved, but produced a considerable slough of the integuments, which was a long time healing over. The value of cold is typically seen in cases of sprain and of violent wrenchings of a joint. For example, after breaking down adhesions in cases of fibrous anchylosis, I know nothing so certain to obviate the tendency to synovitis as the immediate and continuous application of ice to the roughly handled joint. In the same way, thin bandages wrung out in cold water, kept cold, and applied with a fair amount of pressure, constitute the best of all treatments in cases of recent sprains and contusions. Besides causing contraction of the capillaries, cold, still acting through the trophic nerves, produces muscular contraction, to which property is due its efficacy in causing contraction of the relaxed parturient uterus ; while its former property gives its value as a hæmostatic in cases of oozing from a stump or other parts after operation.—*Druggists Circular.*

Osseous Lesions in Infantile Syphilis.—(M. Parrot, *Archives de Physilogic*, *Lancet*, Nov., 1876.)—They are the most common manifestation of syphilis, and make their appearance some days, weeks or months after birth. They are diagnosticated from rachitic changes by their appearance in the earlier periods of infancy, and on the other hand, the latter lesions are rarely seen before the sixth month of extra-uterine life. The long bones of the limbs, scapula, ilium and cranial bones are those most frequently affected with the syphilitic taint, while the ribs, clavicles, metacarpal and metatarsal bones and the vertebræ more rarely suffer. The bones are always attacked symmetrically. The lesions are arranged by M. Parrot under four heads, according to the degree of osseous change. Those of the first degree are seen in the fœtus and in infants who live but a few days. The affected bones are covered with a layer of osteophytic growth and the epiphysial cartilages are thickened, so that sometimes the diameter of the bones attains double the normal size. In the 2nd degree, the layers of new bone are not so compact and are deposited usually upon the lower extremities of the humerus, the upper of the radius, the anterior surface of the femur, and the inner surface of the tibia. At the same time a gelatiniform atrophy of the cancellous tissue takes place which soon extends to the compact substance and lastly to the layer subjacent to the epiphysial cartilage. This osseous degeneration gives rise to the syphilitic pseudo paralysis of the new-born. In the 3rd degree, which affects older infants, an hypertrophy of the medullary substance gradually encroaches upon and displaces the osteophytic productions of an earlier date. This occurs most frequently in the lower third of humerus. In the 4th degree, spongy tissue develops itself at the periphery and the extremities of the long bones, which lesion occurring after the sixth month of life may pass into and be mistaken for those of rachitis.—*Detroit Med. Journal.*

Dangerous Prescriptions.—Some cases are mentioned in our exchanges in which corrosive sublimate has been dispensed for calomel in consequence of either prescriber or dispenser being unable to follow the changes which have been made in the nomenclature of these two chlorides. We have always doubted the propriety of a pharmacopœia attempting to follow the shifting views of chemical theory. A name for a drug need not be chemically correct. A worse case is reported in which *hyd. chlor.* was written by a physician who intended it for hydrate of chloral. Corrosive sublimate was dispensed, and the patient nearly killed, life being saved by vomiting occuring immediately on swallowing the poison, and timely aid. A critic who pronounces the physician's act a blunder, and the dispenser's worse, says the rule should be religiously observed never to abbreviate those words but to write them in full *hydratis chlorali*, or else put it in English. Now the word *chloral* is not declinable in Latin, and should, moreover, precede *hydratis.* Its proper position would render such another blunder less likely, and should therefore be assigned to it, and we hope critics will not generally violate grammar by adding terminations to undeclinable nouns.—*The Doctor.*

Dr. Edward Warren, (Bey,) formerly of Baltimore, a prominent American physician of Paris, has just been created a Knight of the Order of Isabel the Catholic, as a recognition of the professional skill displayed by him in the successful treatment of some Spanish personages of high position.

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ARTICLE I.

Annual Session of the American Dental Convention, the Southern Dental Association, and the Maryland and District of Columbia Dental Society, in Joint Session.

Reported for this Journal by Prof. J. B. Hodgkin.

FIRST DAY'S PROCEEDINGS.—MORNING SESSION.

The annual session of the American Dental Convention, the Southern Dental Association and the Maryland and District of Columbia Dental Association commenced at Oakland, Md , in Memorial church, Tuesday, August 14th.

Dr. W. H. Atkinson, of New York, President of the American Dental Convention, presided over the opening exercises, with Dr. A. C. Ford, of Atlanta, Ga., Vice President of the Southern Dental Association, and Dr. R. F. Hunt, of Washington, D. C., President of the Maryland and District of Columbia Dental Society, on the platform with him.

An address of welcome from the Maryland and District of Columbia association to those assembled was read by Dr. Nelson, of Frederick, Md., reviewing briefly the history of dentistry in the past, its present status, and what may be expected of it in the future. At the conclusion of his address, Dr. Atkinson, in the absence of any prepared address made a few remarks explanatory of the origin of the American Dental Convention, its rise and progress. The learned and unlearned had participated in its organization, the latter, as is always the case in such organizations, being the most strenuous in laying down stringent rules by which others are admitted, and so in consequence of the difficulties incident to its organization, there arose in 1860 another society, the American Dental Association.

An earnest desire had always existed to merge into one body these separate and antagonistic elements, and his acceptance of the position of president last year was with a hope that such a reconciliation might be brought about; he had an earnest desire to heal this schism, but efforts in the past had been failures, at which it perhaps is as well to rejoice— certainly no great cause for regret. No committee from the American Dental Association had met the advances of the American Dental Convention, and so the proffers of reconciliation on the part of the convention were a failure. Still, at the last meeting of the former body a committee was appointed, which will doubtless shape a report which will command respect, and possibly conciliate the two bodies. It would be desirable if all these societies could be so constructed as to render it no longer desirable that the American Dental Convention should exist.

Whatever else we may do, let us here throw aside all envy and bickering, and with a sincere desire to learn the truth, give our hearts to this work; so acting as to give the lie to the terrible suspicion which obtains among the public that we come from these gatherings more fully prepared to wrench unclean money from our patients.

At the conclusion of his remarks, Dr. Ford, of Atlanta, Ga., Vice-President of the Southern Dental Association, in the absence of Dr. Cobb, the President, made a few remarks, explaining the status of the body he represented, as to its non-sectional character, its aims, &c., expressing himself as a worker rather than a talker, and rejoicing at the fraternal feeling which made it desirable that three such societies should thus unite, feeling sure that good would ensue.

Dr. R. F. Hunt, of the Maryland and District of Columbia society then read his annual address. Adverting to the fact that there were here assembled three distinct societies, it marked a large advance in union of sentiment, and showed the onward march of dental surgery, and with this advance our responsibility has increased. We have reached a point where our investigations must no longer be partial, but must embrace all the organism, and our researches carry us back among past generations.

The profession is equal to the demand made upon it, and its new phases are met and grappled with in true scientific spirit. It would be well, however, for us to ask ourselves, each man of us, what are we doing for dentistry? Are we earnestly endeavoring to add our strength to the common fund, or are we content that others shall work for us?

He thanked the Maryland and District of Columbia Association for the honor of the post he held, welcomed Drs. Atkinson and Ford and the associations they represented and presided over, and concluded with an earnest hope that all jealousies and bitter feelings would be laid aside, and all join in one united effort for the common good of the human race.

Dr. Atkinson, Dr. Hunt having concluded, rose and stated that this was a joint meeting of three associations, and they had so prepared the programme as to hold the sessions together, in such a way as not to commit any person present to the support of more than one body.

Dr. Waters read the minutes of last year.

Dr. Atkinson: As there is no quorum of the American

Dental Convention present, action on the minutes will be laid over.

The reading of the minutes of the Maryland and District of Columbia Association was dispensed with, their printing ordered, and on motion of Dr. Coy, the meeting adjourned to meet at half-past three.

AFTERNOON SESSION.

Dr. Atkinson, in calling the convention to order, stated the terms of admission to the American Dental Convention, and also to the other associations. In seeking for a term by which to style this meeting he would perhaps call it a "mass-meeting," as it partook more of this character than of a regular organization.

Prof. J. B. Hodgkin, of the Baltimore College of Dental Surgery, and Dr. B. M. Wilkerson, Demonstrator of Operative Dentistry in that institution, and Dr. E. M. McSherry, of Frederick, Md., were elected active members, and S. Waterman, M. D., of New York, T. B. Evans, M. D., of Baltimore, elected honorary members.

Dr. S. Waterman had, it was stated, an interesting lecture on the Spectroscope and arrangements were made by which, at an early day, the Associations could have the benefit of hearing it.

A number of committees were called, and no reports being made, the subjects were passed for the time.

Dr. Ford read a paper written by Dr. E. Parsons, of Savannah, Ga., on Dynamic or Vital Forces, and at its conclusion it was discussed by Dr. Atkinson, who said that one statement of the paper was well worthy of thought and that was, that we were better prepared to do than to understand what we do.

Reports from a large number of committees were called for, without eliciting responses; some one stated that none were at hand.

A letter was read from Dr. Fouke, of Maryland, stating that in lieu of a paper on Mechanical Dentistry, promised by him, he would send one on Æsthetical Art. Adjourned.

SECOND DAY'S PROCEEDINGS.—AFTERNOON SESSION.

The Joint Convention assembled at half-past three, Dr. Atkinson in the chair.

Dr. C. Palmer, of New York, took the floor on the subject of Operative Dentistry, illustrating his remarks by reference to a number of diagrams of the front teeth, showing the damaged condition of the teeth from mechanical abrasion, and his manner of filling such teeth, restoring the lost tooth-form, &c. He prefaced his address with the sentiment that all his efforts were based on an earnest desire to help and benefit his fellow-men, and to that end he made his teaching as much as possible by demonstrations. He got his impressions from unknown sources, and could only work as he was helped.

Our tendencies are in these meetings toward the higher developments and phases of scientific discussion, and to the avoidance of details. It was to these last that he hoped by directing attention to do some good.

His subject, the filling of teeth, involved many preliminaries which he would pass over and take up the steps involved in—

1st. The adjustment of the rubber-dam.

2nd. Separation of the teeth.

3rd. Preparation of the cavity.

This last step in this process is made, always keeping in view the design of using only the most cohesive gold—he uses no other—and hand malleting, using serrated points.

To deal with difficult cases was desirable, as most of us only needed instruction here, plain cases being within the mastery of all.

The first step, the adjustment of the rubber dam, was not difficult with properly constructed clamps; some of the best were invented by his son, Dr. Delos Palmer, and indeed he was the originator of the rubber-dam clamp. His plan for constructing a clamp was to take an impression of the tooth—he referred to third molars, posterior and buccal cavities being those under consideration—make a plaster model, fit a sheet—lead pattern on this, shaping it as desired and copy this in sheet steel, fitting this with great care and tempering.

A special feature of these clamps is the lowering of the bow of the clamp, thus clearing the adjacent parts and getting it out of the way of the operator.

If he adjusted the rubber-dam without a clamp he would commence at the tooth anterior to the one he wished to operate on; if he used a clamp on the other hand he commenced at the back and worked forward.

As to the thickness of the rubber-dam, he used only the thin—the thick rubber was cruel to the patient and unmanageable.

The cavity was so shaped as to provide for a cohesive gold filling. He carried the gold towards the walls, filling around the side first. He was satisfied that cohesive gold made the tightest stopping. His method differed somewhat from that pursued by some operators; he used the gold in large pieces, and in loose folds. He also cuts retaining points straight, not undercut, and such points as he may drill are drilled very small. He used retaining screws only occasionally, and preferred not to depend on them. The gold itself was No. 4, not annealed by the maker—he was sure that this was useless and injurious, each heating doing harm. He heated it to redness, and even to whiteness. He also illustrated a simple method of rolling gold into rope by the use of towel He reiterated that the gold must come from the maker beaten, not annealed at all. Such gold could be kept indefinitely, and made as cohesive as desired when wanted. E. Kearsing, 104 Hoyt street, Brooklyn, N. Y., made the only gold he could use, making it after his special directions.

At the conclusion of his remarks the meeting adjourned to meet at half-past seven at night, to resume discussion of operative dentistry.

NIGHT SESSION.

Meeting assembled at half past seven, when Dr. Walker, of New Orleans, read a paper written by Dr. McLane, on pathological conditions of the pulp, giving a history of the nature and condition of exposure of the tooth pulp, the method of reducing congestion, inflammation, &c., and giving the therapeutic and surgical treatment of such cases.

Dr. Coy then read the report of the committee on operative dentistry, which, covering many points, was too brief in each to admit of an abstract being made. It claimed for most operations greater success if performed with soft foil, using cohesive, as an exception. The record of soft foil was no uncertain one on this subject, too much lasting and durable work having been done by old operators to render the question of the usefulness of soft foil unsettled.

At the conclusion of the reading of the report, Prof. J. Taft, of Cincinnati, Ohio, discussed the first paper read, that on the pulp, advocating strongly the use of all possible means for the preservation of the pulps of teeth, and claiming that no one did his duty to his patient who acted otherwise. He hoped the day was at hand when all pulps would be saved alive. He was fully assured in his own mind thatthe pulp was no useless piece of tissue which had served its purpose in the development of the tooth, and could be destroyed with impunity, but that it was the organ by which the tooth was nourished, and in case of its death much more speedy breaking down of the dentine occurred. Dead teeth were also much more liable to abscess and pericemental disease. He discussed the various conditions of the pulp exposure from decay, wear, and the accidental exposure by an operation, and on these depended the treatment. Accidental exposure he thought could always be capped at once, while that arising from decay would usually require treatment, especially if disease was, as is usually the case, present. The capping material should possess certain properties to render it useful; it should be such as would not irritate the pulp, be easily adjusted with the most perfect exactness against the pulp without pressure, and should be durable in itself. It should be acceptable to the pulp chemically, should not be rough, should be a non-conductor of thermal changes. A majority of his cases of capping he thought were successes.

THIRD DAY'S PROCEEDINGS.—Morning Session.

The convention assembled at 11 A. M.

Dr. C. E. Busey, of Baltimore, being proposed for membership, Dr. E. P. Keech moved to ballot for election. This motion was lost and Dr. Busey was elected, *viva voce*, a member of the Maryland and District of Columbia Dental Society.

A paper on anæsthesia by Dr. H. C. Thompson, of Washington, D. C., was read. The line of investigation pursued by the committee proposing the paper has two objects in view: 1st. To substantiate the investigation of others, and 2nd, To pursue an original line of research, making this as new as possible. Anæsthesia was certainly the most dangerous condition of life, and the most daring should hesitate to induce it. He considered the essentials of this condition to be a diminution, oxygenation, and a retardation of assimilation; and its three stages were perhaps only differences in degrees of action. He disputed the propriety of the usual preparatory preparation of the patient for anæsthesia by the use of diffusible stimulants as wrong in principle, as the patient should approach and pass into this state, in as nearly a normal condition as possible. He considered that chloroform had direct power to arrest the action of the heart

As to restoratives, reflecting that the anæmic condition of the brain was probably secondary to the cessation of the action of the heart, he thought Nelaton's famous method of inverting the position of the patient, *i. e.*—standing him on his head, with a view of causing a return of blood to the head, as less efficient than electricity, inasmuch as this latter could be made to act directly on the heart itself, the organ at fault. The writer referred to the frequent impurities of chloroform as one of its dangers, and showed the methods of detecting them. The paper was in all respects one of careful preparation, and to which a brief abstract does injustice.

S. Waterman, M. D., of New York, then took the floor, and occupied the most of the morning in an address partly written and partly extempore on Spectroscopic Analysis, including a brief history of that instrument and its uses. In introducing the subject of spectroscopic analysis, he assumed that as all anæsthetics were more or less dangerous, it was of vast importance that their methods of action on the blood should be fully known beforehand, that the administrator might be fully aware of the condition he is bringing about. The physical signs of danger from anæsthesia are vague and contradictory, while the chemical results are certain, accurate and easily seen, and it is to these last that he would call the attention of his audience as best determining the action of anæsthetics. As the chemical constitution of anæsthetics is so different, it is an error to suppose, as some seem to do, that they are alike in their action; and the only accurate knowledge of the difference in their modes of action is found through the Spectroscope. He spoke of the Hydrate of Amyl, and of Dr. Richardson, a most thorough investigator on this subject, this being a substance possessing apparently the curious property of annulling consciousness of pain, but leaving active a knowledge of what was going on; the agent itself however having proven dangerous.

Giving a brief history of the spectroscope, and exhibiting an instrument he had with him, he proceeded to show by diagrams and verbal description the functions of this instrument in decomposing light into spectral bands of different colored rays, as familiarly seen in the rainbow, with the addition of many minute sub-divisions and lines, known from their discoverer as the lines of Fraunhoffer, and first described by him in 1814. A marked difference in the constitution of solar and artificial light was that in the solar spectrum, these lines or bands as they are usually called, are interrupted, whilst in the latter they are plain. These solar lines are capable of being photographed, and it was a remarkable proof of the accuracy of different observers that a photographed copy of a spectrum made in this country was precisely like one copied by hand in Europe, showing that the spectrum was the same under all circumstances.

This instrument was of immense interest to the scientific world, as demonstrating the constitution of remote bodies. Any substance capable of combustion on being burned, and its light decomposed into the spectrum, developed certain lines. Sodium was characteristic, so was hydrogen, and so indeed every substance known to chemistry; all gave distinct and constant results. So in this way the light of the sun was demonstrated, to be composed largely of hydrogen, and even the fixed stars and nebulæ were analyzed and their constitution made known. It was worthy of notice, that in these latter no bands, but only spots were seen, probably proving that no solid matter existed. A beautiful illustration of the benefits conferred on the arts by science, was shown in the use of the spectroscope in the manufacture of Bessemer Steel. This instrument was made use of to determine the exact amount of decarbonization of the cast iron, and so the quality of the steel determined with an accuracy, altogether impossible or even approachable in any other way. The whole art of steel manufacture had thus been revolutionised, simplified and made exact.

Understanding that no two sample substances during combustion give the same bands in the spectroscope, and substances of a complex sort, and whose chemical character would be destroyed in the combustion, as liquids, may be examined by passing light through them, and the least change in their chemical constitution detected, we are prepared to understand the value of the spectroscope in demonstrating any changes, which may take place in the blood during anæsthesia. As an illustration of how infinitely small an atom of any substance may be detected, it is shown that the presense of the one three-millionth part of a grain of sodium may be instantly shown by this instrument. And a remarkable instance of its exactness is seen in the history of the chemist Bunsen, who, on examining the water of a mineral spring in Germany, detected a a new spectroscopic line, and consequently a new metal, and evaporating forty tons of the water, obtained two hundred grains of a metal heretofore unknown.

It is characterstic of human blood in a healthy condition, that two certain and constant bands are seen in it by spectroscopic analysis; these indicate oxygenated blood, and may be removed by withdrawing the oxygen with an air pump, and restored by shaking it up again with ordinary air. Blood which is old can be thus restored. The removal of oxygen is always accompanied by the substitution of a black band, for the two dark ones that were before seen. Now in the treatment of the blood with nitrous oxide gas it is seen that a permanent decomposition of the blood takes place—it can no longer be restored—its composition is altered; when once the blood is saturated with this substance it can no longer be re-oxygenised, the injury is permanent. The exactness of these tests lead to conclusions that are unavoidable, *i. e.* that nitrous oxide gas is the most dangerous, instead of the most harmless of anæsthetics, and that in the use of no agent are there so many hair-breadth escapes from death.

Nitrous oxide is not a true anæsthetic. It acts by suspension of one of the most important functions, that of respiration. And its remote effects in producing disease are so common, as to be noticed by all. Numerous cases are on record, of nervous and other diseases being produced, and of death resulting from its use.

He adverted briefly also, to the dangers attending the use of chloroform, showing how it acted by dissolving certain crystalline substances in the blood. Its high boiling point was a grave objection to its use; but the gravest objection of all was found in that its tendency was to produce sugar in the urine, which substance he had repeatedly detected after its administration. The best restoration he thought for narcotism from chloroform was the inhalation of air, heated to 130° F., this being the boiling point of chloroform.

Ether acts quite differently, dissolving certain substances out of the blood, and forming a gelatinous mass.

At the conclusion of the address the meeting adjourned till the afternoon.

AFTERNOON SESSION.

Dr. R. B. Winder, of Baltimore, stated that the Baltimore and Ohio Rail Road Company had kindly offered to give the associations an excursion to the Cheat River, and it was for the association to accept the offer and fix the time. This was done, and Sunday morning was agreed on as the time for the excursion.

Dr. Caldwell, of Baltimore, took the floor on the consideration of the address of Dr. Waterman.

The origin of the spectroscope was due to that genius in chemistry, Michael Faraday, who when a boy, a student of Sir Humphry Davy, had first observed the phenomena which since has taken so important a place in chemistry, and which we have seen may play so important a part in the subject under discussion.

The first universal spectroscope was the flowers which, absorbing certain rays and reflecting others, gave us the colors we find so pleasing to the eye. This is the shadow world where light and shade give results wonderful, beautiful and complex. He thought that as we could read in the flowers the chemical constitution of light and the play of forces, so, if it could be rightly read, the human face might be found a spectroscope where motives and thoughts could be analyzed and read as in a glass. He had hoped that some demonstration and vivisections could have been made here to illustrate these beautiful ideas of Dr. Watermar, but it was found impracticable. Adjourned.

NIGHT SESSION.

Dr. Caldwell resumed his remarks on the paper of Dr. Waterman, on the dark lines of spectroscope exhibited when blood was subjected to the action of Nitrous Oxide Gas. He spoke of the dark line called by Dr. Waterman, the "death line," and dwelt on the curious condition sometimes present in anæsthesia, when the consciousness of pain was in abeyance, while ordinary consciousness was in active operation. As the nerval tracts, over which the nerve current passes in both directions, is the same, it was difficult to understand how this could be.

Dr. E. P. Keech asked if Dr. Waterman could distinguish by the spectroscope old blood, *i. e.*, blood drawn from the body and kept a long time from blood in abnormal condition freshly drawn. Dr. Waterman in reply said this was a question he had never investigated. In reply to a question of Dr. Caldwell, he said, that the results of science are exact, and as a scientist he was bound to accept them, however they might clash with preconceived theories or common observations. If the results of scientific observations did not coincide with what seemed to be the previously known facts of the case he could not help it. As a candid observer he must accept what science demonstrated as the truth. If these hard facts which science develops are hard he could not help it. Brown-Sequard had demonstrated that the removal of the supra renal capsules covered the crystalization in the blood of a substance previously in solution, the hæmato-crystalline. He claimed that in anæsthesia by nitrous oxide, certain permanent changes in the blood were effected, which even electricity could not break up,—the blood was permanently disorganized. The debate on the subject here took a conversational shape, in which the question as to the power of hæmato-crystalline to dissolve carbonic acid in the blood, was discussed; the statement made that the blue color of venous blood was due to the carbonic acid in it, and the re-demonstration by Dr. Waterman that the dark band in putrid blood, and the dark band in blood which has been subject to the action of nitrous oxide gas are invariably the same; and that so far as these demonstrations go, the blood subject to the action of this gas, is permanently and irrecoverably disorganized.

Dr. Caldwell spoke of the uses of electricity in dissipating the tumors, and also in diagnosing their character. He illustrated this by quoting some examples, in which ovarian tumors were diagnosed by the electric current. He had also made a fluid extract of beef, by the decomposition of beef in the electric current.

Dr. Waterman, in answer to a question on the subject of the transfusion of blood said, that he was of opinion that all blood was not fit for transfusion, even that of the same species, and that many of the failures in this direction were due to a want of fitness in the blood used for this purpose. There was a decided difference in the specific gravity of different samples of blood, and this was a point of importance. He had at one time thought that the hæmato-crystalline in the blood could be used as a medicine in those cases where changes had been wrought in the blood, but so many difficulties were in the way that the idea had been abandoned; the chief danger being that some septic change might occur in this substance by long keeping.

Dr. Atkinson expressed himself as always having been opposed to any agent that destroyed action and consciousness; and thought all anæsthetics were of the devil. If the heart beat be fully stopped he had supposed that the subject died infallibly.

Dr. Waterman, who seemed to have been misunderstood, said that if the hæmato-crystalline be destroyed in the blood cells the patient died; this was true, and it was true as he had demonstrated that nitrous oxide destroyed this substance, but it altogether depended on the extent to which it was destroyed as to the amount of injury or death resulting.

He did not wish to be understood as saying that the person who inhaled this gas had all his blood so vitiated in quality as to cause sufficient poisoning to produce death, but that the structural change was complete so far as it went, and if carried sufficiently far would always cause death. He was sure that many cases of poisoning, of debility, decline and death had resulted from this agent, which he thought the most dangerous of anæsthetics.

Dr. Atkinson said that he was sure of one thing,—that no one would go from here to give nitrous oxide as freely as formerly.

Dr. Odell of New York, thought the differences between the speakers was one of fine points rather than real issues. What was brought out here demonstrated that there was no end to real hard study. When he got his degree of D. D. S., he thought he was a finished man, but he found out that it was easy to take a degree, but very difficult to know any thing. He had found the best plan with his patients, was to persuade them, in proportion as he inspired them with confidence in him, and love for him; in that degree he found it easy to influence them to bear the pain of such operations as were necessary in his practice.

Prof. Taft joined in the protest against anæsthetics. Experiments abundantly proved that the practice of administering these was wrong. He knew personally of injury from both nitrous oxide gas and ether. He had known the former to produce hopeless insanity in a few hours. Death occurred in the hands of the best surgeons of the world from chloroform, in spite of all precautions, and in the face of careful examinations for heart and other affections. He cited the case of a patient who had inhaled the gas four years ago, and who said he had never felt like himself since. We judge wrongly that, because death does not take place instantly, therefore no injury is done. The numerous lingering deaths, cases of serious illness, of loss of voice, and other disasters were warnings all should heed. Many of the best operators get along and succeed without the gas, and most of the teeth that are removed there is no necessity for—they could be saved. He had seen pecks of teeth extracted that could have been kept in the mouth. This he thought was one of the most objectionable features of this nefarious practice—the temptation to the wholesale extraction of teeth which ought not to be taken out.

Dr. Evans, of Baltimore, asked Prof. Taft how many times he had used the gas, and was answered, perhaps twenty times.

Dr. Evans said, that he had never given the gas himself, but he certainly was surprised at this wholesale condemnation of and opposition to anæsthetics. The difficulty was not he felt in the majority of cases of death, that the agent was so dangerous a thing, as that the operator was a bungler. He referred particularly to chloroform, and extoled it as one of the grandest medical discoveries, the means of the mitigation and amelioration of more human suffering than all the discoveries of ancient and modern times.

Dr. Coy agreed with Dr. Evans.

Dr. Taft thought one need not give gas at all in order to be a judge of its effects.

Dr. M. S. King, of Pittsburg, always gets mad when he thinks of gas, its troublesomeness and the annoyance and injury of it.

Dr. Templeton, of Pittsburg, stated that he had always made it a rule to give the chloroform himself, deeming himself the equal of the physician. If the patient wanted the physician to give it, it must be done elsewhere than at his office; in that place he was the chief.

Dr. Walker, of New Orleans, objected to nitrous oxide on account of the brevity of the anæsthesia, necessitating hurry and rendering accidents more liable. He had seen, and in this he agreed with Dr. Taft, many cases of injury from the administration of gas, gradual decline and obscure pathological results.

Dr. Evans thought that the cause of much of this trouble with dentists from chloroform, was the result of posture, the upright position being a bad one. He disagreed with the writer of the paper on anæsthetics (Dr. Thompson,) in that he, (Dr. Evans,) considered the pre-administration of whiskey as important, hastening the result, and rendering a less dose efficient.

After some remarks by Dr. Caldwell the meeting adjourned.

ARTICLE II.

Scientific Theories vs. Observed Facts.

One of the most interesting, and by far the most learned paper read at the recent meeting of the American Dental Convention, was one on spectroscopic analysis, by S. Waterman, M. D., of New York City, a physician of ability and culture, with a strong leaning toward the adoption of any conclusions indicated as the result of scientific investigation, and an enthusiast on the subject of the spectroscope. The paper dealt especially with the subject of anæsthesia, or the use of spectrum in demonstrating the action of anæsthetic agents on the blood, as these changes are read by the spectroscope; and, though a long lecture, was listened to with earnest attention, and at its ending the views advanced and conclusions reached made the subject of considerable debate.

The department of the subject which excited the greatest attention on the part of the hearers was the action of nitrous oxide on the blood, and the structural and morbific changes brought about in that fluid by the inhalation of this gas, the writer taking special pains to establish a theory startlingly new, *viz.*—that the changes produced in the blood by this so universally used and so confidenly trusted to agent were of the most alarming and dangerous character; were of a radical nature, involving vital processes, and causing permanent structural modifications in the constituents of this fluid. These changes were scribed as being in all respects similar to those seen in blood which had passed from a normal to a putrid condition, the hæmato-crystaline being seized by the anæsthetics, oxydation hindered, decarbonization prevented, and, in a word, a train of deleterious conditions instituted which were only hindered from being always fatal by reason of their limited extent. Thus in the most sweeping manner, pronouncing this gas the most dangerous instead, as is ordinarily supposed, the most harmless, of the several agents whose use has been so valued as standing between suffering humanity and the agonies of surgery.

Certainly this is all very startling. If the dentists who from year to year have been occasionally administering nitrous oxide gas to restrain the terrors of a nervous patient, and to save the shock which comes to the bravest of us when compelled to submit to an ordeal we so instinctively shrink from,—if they have all this time been poisoning their patients, it is certainly time they were made aware of it, if not by observation of the after effects of the gas, then by the spectroscope. (We do not refer, except in terms of condemnation, to those who keep the slaughter houses when human teeth are sacrificed by the dealers in porcelain and vulcanite.) To have one's hæmato-crystalline destroyed or rendered useless, by an agent we have been looking on as the representative of harmlessness itself,—to be told that when we give gas we are causing a change in the blood, similar to that which occurs in septicæmia, and that we have killed more or less of the vital fluid, is enough to "give us pause," and if we administer this agent again will depend somewhat upon the faith we have in the spectroscope, or at least in our faith in those who interpret its utterances.

The evidence of the spectroscope, as we understand Dr. Waterman, is this: In normal blood the instrument shows *two* special dark bands; these it is claimed are always present and characteristic. Blood decomposed by putridity shows when similarly tested *one* dark band, always present and characteristic. Blood exposed to the action of nitrous oxide shows a band similar in appearance and in position, to the one seen in the second instance. Now it is fairly to be questioned it seems to us, whether such sweeping conclusions are justified from such data, when we reflect on the newness of spectroscopy, and the narrowness of coming to a definite judgment on evidence which seems to be illy borne out by the observed facts in the case. It is certainly true that in this day the pronounced opinions of men handling scientific instruments are ordinarily accepted as true, and rightly so perhaps,—for the mistakes they make are after a time set right by counter investigation,—until he is a bold layman who utters his doubts; still we can but feel a reluctance to accepting views, which seem to be founded in a theory not borne out by every-day observed facts, and which the evidence of our senses seemingly disproves. There are men who for years have had opportunity of seeing the effects, both immediate and secondary of this gas, men of fair intelligence, of close habits of investigation, and some of them at least, earnest students of pathology, who cannot feel that the blood is poisoned after this manner, and that the danger is as great as is alleged to be shown by the spectrum.

That the spectroscope is one of the most brilliant of modern instrumental means of scientific research, that its usefulness in scientific investigation is great, is an unquestioned fact; that it has thrown light upon dark and hitherto unsolved problems, and aided in the development of scientific industry is a fact all are ready to concede; but it does seem to us that because an instrument will show sodium, hydrogen, carbon, &c., under combustion, and that will demonstrate many of the hitherto undemonstrated problems of modern chemistry—that because of this it may be implicitly relied on to prove that identical bands in the spectrum prove identical conditions of so complex a substance as the blood,—that it can be an infallible test that blood acted on by nitrous oxide gas and putrid blood are in the same condition, and that such blood in the circulation of an anæsthetised person is decomposed and irrecoverably so, is a conclusion we are reluctant to accept without further proof.

It is one of the incidental misfortunes of science that her devotees are enthusiasts, and enthusiasts are seldom judicial. The man who falls in love with a microscope, or telescope or spectroscope, though earnest in searching after truth, yet may not construe that truth correctly. The disputes on subjects into which chemistry enter are full of illustration of this failing of human nature. Here, in a field where analysis and synthesis, where examination from every stand point is made available, the results are too often contradictory, or in controversy. How many microscopists see the same things in the same way? or worse still, how often they only see that which they are looking for. We have before us, and publish elsewhere an abstract of an article to be found in the Popular Science Monthly, which shows how conscientiously men of acknowledged ability may differ. [See Article——] a scientist is now the less a human being with the inherent frailties.

The facts are, setting aside as valueless the testimony of the ghouls who mutilate their, for the time, dead subjects, whose shops for the extraction by wholesale of priceless organs can only be characterised as places of habitual and intentional malpractice, and who are in no way worthy of a place or name among professional men,—aside from their testimony—and certainly few dead are carried out from their doors, though thousands living enter,—there are, as was stated previously, not a few men of acknowledged ability, of reputation, and of conscientious devotion of duty, who have watched the effects of anæsthetics administered at their hands for years, men whose facilities for seeing the after effects of nitrous oxide are equal to those of the physician in practice, and who have failed to see its toxic effect or pernicious tendenices, who have not detected those slowly creeping and obscure pathological changes which are predicted as liable to take place, and which are seen by some who—say they have seen them.

Men die daily from causes to our feeble understandings greatly insufficient. "Found dead in bed," "dropped dead in the street," "died suddenly whilst conversing with his family,"—and all this without shock which would seem sufficient to fatally disturb heart or brain or lungs. But when the surgeon gives chloroform with a fatal result, death is always charged to theanæsthetic—is this fair?

The truth seems to be that we are much in the dark as to the method of the action of anæsthetics. This is not written in any spirit of deprecation of the value of scientific research in this matter,—it is probable, nay certain that what we may know hereafter will be due to research conducted strictly after methods indicated by science, for science is truth. But it cannot be best always to blindly accept the saying of the scientist because he is a scientist; here, as elsewhere, we must compare the theory with the known facts. Anæsthetics are too frequently administered, and probably the error is in that direction more than in the choice of the agent. It is to be hoped that one result of this discussion will be to check this recklessness of dentists, who with a little firmness and kindness could often dispense with their use, and whose conservative skill should make their use, and the use of the forceps much less frequent than at present. If however, dentists feel that they cannot dispense with nitrous oxide,we are sure that they ought not to waste valuable time in generating it, while a better article than they can possibly manufacture is purchasable. In these days when so much is expected of the dentist—so much general knowledge, so much reading to be done, and if he feels called to do it, so much practical study in microscopy, or spectroscopy even, for he will be none the worse dentist for spending his leisure this way,—when all this is before us, no one should waste his time in making anything of use in his work if he can get it better made by paying for it.

ARTICLE III.

North Carolina State Dental Association.

The annual meeting of the North Carolina Dental Association, commenced at Raleigh, Tuesday, September 4th 1877.

After a harmonious and interesting meeting of three days, adjourned to meet at Charlotte, N. C., 1st Tuesday in September, 1878.

The election of officers resulted as follows:

President—Dr. J. W. Hunter, Salem.
1st Vice-President—Dr. E. L. Hunter, Enfield.
2nd Vice-President—Dr. D. A. Robertson, Greensboro.
Secretary—Dr. W. H. Hoffman, Charlotte.
Treasurer—Dr. J. H. Crawford, Raleigh.

ARTICLE IV.

Mechanical Dentistry.

BY C. B. ROHLAND, ALTON, ILLINOIS.

Probably no where else do we see the principles of Æsthetics more frequently violated than in Mechanical Dentistry. It is comparatively an easy matter to construct a piece of dental mechanism which will serve the purposes of speech and mastication, but to so construct it as to close the gap which disease or accident may have created, so as to appear as though it really belonged there—from the infrequency with which it is done, the average observer would naturally infer it to be either very difficult, or require qualities of head and hand seldom met with in the profession. The laws of harmony and the paramount necessity of observing them in Dental Prosthesis, have frequently been discussed. Scarcely anyone but knows that the size, shape, color and expression of the teeth should be but complemental to the size, shape, color and expression of the face; that an artificial substitute, must contribute to and maintain the individuality of the patient, and not destroy or even modify it; that to secure the highest expression of the art, all incongruous lines, forms and shades must be avoided and the substitute, not literally but in effect, be part of the patient, bone of his bone and flesh of his flesh. And yet how seldom we see the full realization of these principles. How often the educated eye detects the most inharmonious jumbling together of parts. It has been estimated that not more than one in five hundred artificial dentures made could be safely considered a true expression of high art. A bold estimate certainly, but one that I hardly think we are justified in entirely ignoring. To acknowledge this however, is in no wise a reflection on either the honesty, intelligence or progressive spirit of the profession. It is not my purpose therefore to assume the role of a modern Jeremiah, bewailing and lamenting over Mechanical Dentistry as one of the lost arts, or to utter senseless philippics on the degeneracy of the present. The ghost of the dead past can point to no acquirements that the living present cannot discount.

If we allow ourselves to be influenced by the lamentations of those who have been so liberally berating the profession for its apparent lack of progress in this branch of the art, we will be apt to do ourselves and our calling gross injustice. I use the terms, "apparent lack of progress," advisedly, and I wish to take exception to the assumption that Mechanical Dentistry has not advanced, but on the contrary, retrograded. I wish to add a gentle minor of dissent to the grand chorus of lamentation with which we have been so liberally favored. If we as a profession have so improved our materials and methods of work, that where one formerly was able to avail himself of the benefits of our art we are now able to add to the comfort and happiness of hundreds, why this, I call progress. And this, I assert, we have done. If the knowledge, taste and experience which formerly was confined to very few, is now diffused among the profession generally, and this supplemented by improved materials and appliances, this too is progress. I am now speaking of the profession generally, and not of isolated cases. Then again, if what formerly required exceptional skill to accomplish but indifferently well, has been so simplified that the same object is accomplished in less time, and with less trouble and expense, then this, too is progress. And this has been done. That new methods require less manual skill, is no evidence of retrogression. The labor-saving and time-saving machinery which crowds our mills and factories, have not the less developed our industries, and are not the less emblems of progress that have contributed to the comfort and happiness of the world because forsooth, they superseded manual skill.

Our mission, as Mechanical Dentists, is to restore the lost or impaired functions of speech and mastication, and preserve as near as we can, the features and expression of the human face. And will any one deny that we, as a profession, fulfill our mission better now than formerly? The artificial dentures of to-day serve their purpose better than the artificial dentures of yesterday. To assume the contrary is to assume that the profession of the present is not as honest, intelligent and painstaking as the profession of the past; that trickery, fraud and cupidity are characteristic of the Mechanical Dentist of to-day. That, in other words, he pursues his calling not for the good of his fellow man, but from the most sordid and selfish of motives, and fails to profit from the experience of the past, through wilful ignorance or indolence. What an absurdity! What rank injustice! Our knowledge of and acquaintance with the many true, earnest and intelligent men composing the bulk of our profession, forbids accepting such an assumption. Our calling has its rump adherents it is true, but the profession proper is composed of just as honest, conscientious, intelligent, and earnest men as are to be found anywhere. In these qualities it stands second to no other in the world. Conceding this then, does it not stand to reason, that with the increased knowledge and experience, and the improved methods and materials at our command, we should have advanced, rather than retrograded? Much indeed, is still to be learned, and more perhaps, unlearned. Perfection is still in the dim distance, but we have every reason to believe that we are approximating it. The main obstacles in our path are, not the lowered standard of intelligence and morality, but the imperfection of the materials at hand with which to work.

It has been well said that nothing of human invention is ever perfect, and this is especially applicable to the materials used in the construction of Artificial Dentures. The greater the skill and taste of the dentist, the more he feels himself limited and baffled at almost every step, in giving them true expression. On the very threshold of his attempt to furnish a substitute, fulfilling all the requirements of Æsthetic Dentistry, practical use, and the daily exigencies of an average practice, he finds hisefforts cramped on all sides.

What then is mainly required to construct a perfect set of teeth? Let us examine with the lights we at present have. Assuming the perfect set to be constructed on the same general principles as at present, we would require a base thin and light as paper, flexible enough to adapt itself perfectly to all the variations of the mouth in form and movement, yet firm enough to serve the purposes of mastication; indestructible; perfect conductor of thermal changes; perfectly transparent, or of natural gum color; and last but not least, easily manipulated, and comparatively inexpensive.

Such a case, combined with plain teeth a trifle more durable, with bicuspids and molars a trifle less impossible in shape than most of those at present furnished, would perhaps come as near enabling the skilful artist to put his feelings into shape as anything we can now conceive of within the bounds of possibility. This is what we would like to have and what we have been striving for, and this is what we still fail to grasp. A moment's consideration of the various bases now in use, while demonstrating the onward movement of Mechanical Dentistry, will also show some fatal defect in each. Gold, Continuous Gum, Porcelain, Aluminum, Rubber, Celluloid, or their combinations, each having points of merit, all fail in some important particular. While Continuous Gum and Porcelain Base probably fulfill the requirements of Æsthetic Dentistry better than any of the others, they are, as at present constituted, practically out of the question as substitutes for the Perfect Base. First, on account of the difficulty of manipulation, and second, on account of the popular demand. Not that it requires too much taste and skill, because the profession has grit and ability enough to wring success out of anything that gives fair promise of supplying its needs, but because its results are not commensurate with the time, trouble and labor involved, with the demands it makes on the patience of the dentist, and the time of his practice. This is an actual fact in actual practice, and captious criticisms will not make it any the less a fact.

The demands of Operative Dentistry are increasing year by year, and with the increased attention to the preservation of the natural teeth follows a naturally decreased demand for the services of the Mechanical Dentist, so that where formerly three-fourths of an average practice was purely mechanical, the exact reverse of this is true at present. In our estimate then of the availability of a base, this fact must enter largely into our calculations, and will in a measure explain why these bases have not been more generally adopted. Add to this the demands of the patients themselves, and we have a combination of obstacles which practically render useless these undoubtedly meritorious bases. Of course, we should educate the public! Of course! We have been told that so often, that it necessarily must, or at all events should be, just the thing. Well! We see enthusiastic youths rushing forth from our schools and colleges every year, animated with the noble and glorious purpose of educating the world, and generally winding up by—being educated! And this is about the result in practice. Your ordinary public is an obstinate beast to educate, and the task is rendered ten times more difficult if it makes what it conceives to be additional inroads on its pocket. The dentist with the average practice who insists on regulating the demands of his patients and banishing cheap bases entirely, enters upon an unequal contest; for while persistent effort may occasionally bear some fruit with those who demand the cheaper bases from choice, back of them come the hosts of those who ask them from necessity, and to whose comfort and happiness we are just as much bound to contribute. Theoretically, the former ought to know better, and if not they should be taught, but practically they do not know better, and have a beastly way of going somewhere else to get what they want, if one undertakes to educate them too much. They cannot see the use of expending a hundred dollars for an artificial denture when their neighbor eats, talks, and swears with old-time volubility, with a set just out of a steam tooth factory for eight dollars. They have an idea they are doing very well in being willing to pay a regular dentist two or three times as much for a denture that certainly will not, as far as their comprehension goes, accomplish more for them. With the latter, and their name is legion, who demand cheap bases from necessity, of course we cannot quarrel; our plain duty is to do the best we can for them under the circumstances. And here let me remark, *en passant*, in answer to certain strictures frequently made on the profession, that while an honest dentist can never be persuaded by those who put themselves under his care to do anything which he is satisfied is wrong, and will result in their material injury, yet in the matter of artificial dentures, after giving them the benefit of his best judgment and advice, he has no more right to abuse them for making a choice in accordance with their feelings or necessities, than "The Butcher, the Baker, or the Candle Stick Maker" has to quarrel with the choice of his customers.

Here then are some of the conditions under which nine-tenths of the dentist, in this country are practicing, and here is to be found the key to the stronghold that rubber and "its equivalents" have taken upon the profession. When first introduced, it gave promise of supplying a long felt need. Although comparatively ignorant of its properties, the profession took hold of it, and wrought with it, until it compassed its possibilities and made it supply, though indifferently well, the place of a cheap and useful base for artificial dentures. There must have been something good something just needed in it, to withstand the bitter abuse of which it was made the subject. To denounce it was a badge of honor, to countenance it was to be ranked with the rump adherents of the profession. The secret of all this bitter opposition to it, aside from the tax on its use, was not so much its imperfections, but the fact that its easy manipulation opened the doors of Mechanical Dentistry to hundreds who, whatever their pretensions, were unable to do anything else than—spoil rubber. This was an evil of course, but could not be remedied by declining to avail ourselves of its advantages. Because quacks are the better enabled to pursue their calling by the introduction of simplified methods and materials, is no reason why we should refuse to adopt them. By the way, does it not seem a little singular that the profession while vigorously denouncing rubber, as vile trash, a curse, and the invention of the devil generally, should at the same time have just as vigorously fought for its free use! That the same societies and organizations that passed resolutions denouncing its use, and those countenancing it, should afterwards adjourn and form themselves into a Holy Alliance, sworn to fight the tax on its use, until the last dollar they could collect was spent! Was not that just the least bit inconsistent?

The advent of rubber, with its advantages and disadvantages, turned the attention of the profession in a new direction, and various spasmodic attempts at improvement finally blossomed forth into celluloid. This last introduction represents the striving after better things; it is, apparently at least, one step nearer the perfect base; light, indestructible in the fluids of the mouth, harmless, tolerably good color, easily manipulated, and comparatively inexpensive, it only lacks improved durable color, slight additional strength and toughness, so as to permit its being made thin enough to be flexible, and the test of time, to make it take a position far in advance of anything yet offered to the profession. It certainly seems to have the advantage of rubber in every respect—in beauty, cleanliness, healthfulness, color, close adaption to the teeth, and certainty of results in manipulation. Its durability alone, seems still to be in question; but if a denture of celluloid in constant use for three or four years shows no signs of disintegration, one is justified in expecting it to last three or four years longer, and this after all, is just about the average life of the rubber plate. If formerly, under the use of rubber, ten plates came back for repairs to one now under the use of celluloid, is not one almost justified in anticipating the test of time? And this gentlemen, has been my experience. As a substitute for rubber, uniform success, so far, has been the rule in my use of it? Indeed, so certain have the results been, that where failures have occurred they have invariably been due to accident, carelessness, or bad judgment. Whether my standard of excellence is not so high as that of Drs. Chase, Welchens, and a few other careful and intelligent observers who have expressed their disappointment in their use of this base, I do not know. I confess this discrepancy in experience has puzzled me considerably; I cannot account for it; I have no new or unusual methods of working it; I only know that in my practic, celluloid satisfies the requirements of healthfulness, comfort, and æsthetics, in all cases better than rubber, and in a great many cases better than the old style metal plate. One defect however in a majority of cases, is a gradual change of color, varying with the habits of the patient, and the conditions of the mouth. Whether this is a defect in the composition of the material or its subsequent manipulation, or both, is a question in my mind. Plates that have been worn for years have come under my observation which preserved their color remarkably well. Whether these passed through different processes of manufacture, and if so, whether in the preparation of the material or its subsequent treatment, I do not know, but it seemed to indicate conclusively that there was some way of overcoming this difficulty, on which we as yet only occasionally stumbled by accident without comprehending its bearing. The fact of the matter is, we know too little of the material yet to compass all its possibilities. We are groping along blindly in the vestibule of knowledge, credulously accepting the dictum of each new comer as to its proper treatment. What we need is another Wildman to make it the subject of careful, patient, methodical investigation. That we have been able to accomplish so much in comparative ignorance of its properties and behavior under different conditions, indicates a mine rich in possibilities. Rubber was unwieldy and unmanageable in the hands of most, until Prof. Wildman took it, dosed it, drugged it, and finally conjugated it for the profession in all its moods and tenses. The same, I opine, applies to celluloid; we are really only on the threshold of understanding it. The material, both in its preparation and manipulation, must be subjected to patient, thorough, and methodical investigation, its behavior under various conditions studied and analyzed until its whole chapter of possibilities is laid bare; this is what must be done before we can dogmatically assert that celluloid is or is not destined to be the coming base. I think we are perfectly justified in expecting still better things from it, but even in its present crude state it will have a marked influence for good on the profession in developing its taste and rendering less frequent those incongruous cases alluded to in the opening of this paper. With its advent has come the possibility to a great extent, of getting rid of the hateful tyranny of those horribly obstinate block teeth, which so stubbornly refuse to take the hue and impress of surrounding circumstances, and so cramp the skin and taste of the workman. Here then we rejoice in the removal of another obstacle in the grand march of the profession towards the perfect base. This alone if it were its only point of superiority over rubber, would be sufficient to entitle it to consideration and the stamp of approval.

In conclusion then, gentlemen, let us not despair of the future of Mechanical Dentistry. Year after year it has been quietly and steadily fulfilling its mission, and preserved its integrity through all, in spite of the assaults of the ignorant and vicious quacks without, and the abuse of well meaning possibly, but no less persistent Diogenes within. Let us think well of ourselves and our calling, and not fall into the error and injustice of railing at it for the faults and follies of all the irresponsible quacks who may prostitute its livery to their own base uses. If we would have others respect us we must not confound ourselves with such as these. Let us investigate all things with patience and fairness, and not refuse a hearing to that which clamors for our attention, simply because we may be compelled to root out deeply implanted prejudices. This is only putting a drag on the wheels of progress. In a contest between prejudice and egotism, on the one side, and the good of the many on the other, the former are bound to go under. One by one, in spite of ultra-conservatism, the obstacles in the way of perfect work are disappearing, and though still far from perfection, we are slowly but surely working up to it—how slowly and surely depending in a great measure on ourselves.—*Transactions Ill. State Dental Society.*

ARTICLE V.

The Microscope—Its Misinterpretations.

"To enable the student to familiarize himself with the true power of the microscope, and to train his eyes to detect errors of vision, certain well-known test-objects are in general use, which are also convenient to test the quality and power of objectives. A favorite object of this class is the scale of the Podura, a minute insect, which dwells in remote nooks of dark and damp cellars, and similar localities.

This scale is usually mounted dry, and, when viewed under the compound microscope with suitable objectives, presents a surface studded with marks similar to the well-known note of exclamation (')

This test-object has been for years the delight of microscopists possessing high powers, and a sharp definition of its peculiar markings as above mentioned was accepted as its true appearance and form.

For twenty-five years this scale was under constant examination by every grade of microscopists, from the grandees of the Royal Microscopical Society to the humble tyro, without any new or special feature being noticed, when on November 10, 1869, Dr. G. W. Royston Piggott, F. R. M. S., read a paper "On High-Power Definition" before the Royal Microscopical Society, and surprised the members by stating that all these years they had been gazing at the podura-scales, but had never yet seen its true markings. Dr. Piggott's paper described very fully what he had discovered as the true markings, and illustrated it with drawings which represented them to be distinctly of a beaded character; in fact, as dissimilar from the old accepted idea of their form as contrast could depict them.

Every microscopist was now hunting podurae, and cellars damp and dismal were ransacked for the little scale-bearers, doubtless to the astonishment of numerous colonies of spiders, who must have been much provoked by this invasion, and thus commenced a controversy which is not yet concluded. Men equally eminent have taken opposite sides and expressed the most contrary opinions; and I now propose to give a brief *resume* of what has been said and done in regard to this subject, because the matter is full of instruction to those interested in microscopical research. Not that the markings of the podura are of the slightest importance or have any scientific significance, but the gravity of the conclusion which are sought hinges upon the fact that, if the views of Dr. Piggott are correct, our most eminent microscopists have been promulgating false and erroneous statements respecting the form of a well-known and common object; and, in whatever light the controversy is viewed, the humiliating confession must be made that they are still unable to determine the correct focus or the proper method of illuminating it.

Dr. Piggott commences by calling resolving the podura-scale "a difficult enterprise," and then describes the beaded appearance in the following manner: "Under a low power, as 80 or 100, the podura-scale is remarkable for its wavy markings, compared to watered silk; raising the power to 200 or 250, and using a side-light, the waviness disappears, and in its place longitudinal *ribbing* appears; with 1,200, they divide themselves into a string of longitudinal beads; but with 2,300 they appear to lie in the same plan and terminate abruptly on the basic membrane; in focusing for the beads attached to the lower side, the beadings appear in the intercostal spaces."

Respecting the old received views of the podura-scale, Dr. Piggott says: "With 300 to 500, the celebrated 'spiner' appear, according to the size of the scale, as very dark tapering marks (like 'notes of admiration' without the dots ' ' '.) To see these clearly with 2,500 has been considered the *ne plus ultra* of microscopical triumphs, and it is consequently with no small diffidence that the writer ventures to traverse the belief of twenty-five years."

Thus was the gauntlet thrown down, and the challenge was at once accepted by various members of the Society, who, on the conclusion of the reading of the paper, at once, disputed the new doctrine. Mr. J. Beck was the first to express an opinion, and rather increased the confusion of the subject by stating that both the spines and the beads were illusory, and that the true structure of the podura-scale was a series of corrugations on one side, and that the reverse side was slightly undulating or nearly smooth, and that the notes of exclamation were due to refraction of light.

December 8, 1869.—The President, the Rev. J. B. Read, stated that he, with Dr. Miller and others, had interviewed Dr. Piggott, and was bound to say he had seen the beaded appearances, and it was clear to him, *now*, that in the best object-glasses small residuary aberration existed.

This slur upon the best object-glasses brought out Mr. Wenham with a paper, in the *Microscopical Journal* of June, 1870, in which he repudiated such error, and described the beaded appearance as an illusion, obtained by a trick of illumination, and by examining the scale with the microscope out of focus.

At the June meeting of the Royal Microscopical Society a letter was read from Colonel Woodward, of Washington, inclosing photographs of the podura-scale, showing what he considered to be the true appearance. These photographs showed the spines. Colonel Woodward, however, reserved his opinion, ond asked for a specimen of the true test podura-scale.

It would be tedious to continue the subject and give even an outline of the papers and discussions that have been provoked by this knotty question: I shall, therefore, conclude by stating that Colonel Woodward has since produced two photographs, showing the two aspects of the question; they are made from authentic scales, and are pronounced very perfect.

The fact that the most skillful microscopists of the age all differ upon the true appearances of a common and not very minute object, and the microscope itself presenting to the vision the most opposite appearances of one and the same object, should act as a caution to those who accept too readily theories based upon microscopical research; and suggests that, in the cause of justice, when life is at stake, single-handed evidence relating to the microscopical examination of apparent blood-stains should be verified at least by a second person before being accepted.

Thus we see that the so-called revelations of the microscope are but hieroglyphics, needing the interpretation of a mind of the highest culture, and that while the microscope is a good servant it is a bad master—mighty in the hands of a Huxley, but as useless to a man without the powers of discrimination as the chisel of Michael Angelo would be in the hands of a Modoc.—*Popular Science Monthly.*

ARTICLE VI.

Action of Nitrite of Amyl.

Dr. W. D. Lane, in the *British Medical Journal*, Jan. 27, offers the following conclusions regarding the action of amyl nitrite:

1. Amyl nitrite when inhaled in small quantities, produces reddening of the face in man, and of the nose and mouth in kittens; this action is due, according to Brunton, to the dilatations and over-filling of the arterioles.

2. When inhaled by kittens in large quantities, it produces cyanosis of the nose and mouth along with insensibility. The cyanosis arises from over-distention of the venous system, this being due to the engorged arterioles propelling the blood into the veins, while the insensibility is probably caused by over-distention of the venous system and the heart.

3. When inhaled in small quantities, it produces recovery from chloroformic insensibility, by dilating the arterioles of the brain and thus removing the cerebral anemia due to chloroform.

4. When inhaled in large quantities, instead of producing recovery from chloroformic insensibility, it not only retards it, but it may cause death by paralysis and over distention of the heart, and engorgement of the venous system.

5. It causes a rise of temperature when inhaled in large quantities by the increased amount of blood in the arterioles, causing an increased tissue-change in the body.

9. In large doses (inhaled) it produces a fall of temperature.

7. It also helps to produce recovery from the chloroformic insensibility by raising the temperature which is always lowered by chloroform, and by removing the paralysis of the heart due to chloroform; this action is well seen by the nitrite of amyl making the heart's beats fewer and its sounds louder.

8. Death is caused chiefly by paralysis of the heart, which is shown by all its cavities being distended, and by engorgement of the venous system —*Jour. Nervous and Mental Diseases.*

EDITORIAL, ETC.

Prof. James B. Hodgkin, D. D. S.—It affords us pleasure to announce, that James B. Hodgkin, D. D. S., Professor of Dental Mechanism and Metallurgy, in the Baltimore College of Dental Surgery, has connected himself with this Journal in the position of Assistant Editor. Prof. H. is not unknown to our readers as he has frequently contributed articles which have proved interesting and instructive. We will, however, allow him to speak for himself.—*Senior Editor.*

The Associate makes his bow. Taking place as a junior in the ranks of journalism, he naturally feels diffident and sensitive of criticism. Time may dull both these qualities. He comes to the post with a good share of earnestness, which it is hoped will compensate for any crudeness; and trusts that as perseverance is essential to success, he may not lack this also. Earnestness and perseverance, then, on his part, and the kind indulgence of friends and readers,—with these and health, perhaps a little may be done for our profession, ennobled by many choice spirits, and degraded, sadly enough, by other spirits which grovel.

The position of editor of a dental journal should not be different from that occupied by those in charge of other literary work of like character, yet it seems to be. The editor should feel perfectly free to criticise what is expressed by writers and speakers in the profession. Yet, by a singular condition of affairs, what is allowed in other journalism seems to be fought shy of by those conducting the dental journals. Why, it is hard to say, unless the profession is not sufficiently advanced for such reviewing.

Cannot our writers and speakers take a step forward with us, and accept honest criticism in the spirit of truth and sincerity? As it is there seems to be offence in the idea of this,—an impression that to be critical, means to be personally hostile. We are sorry to write these words, but no one can attend a dental convention, or read consecutive numbers of a dental journal without feeling that this is true. It ought not to be.

By this time the idea dawns on the mind of the reader that the Associate means to set himself up as a reviewer, and unmercifully turn iconoclast. By no means; he has neither taste or time for such work. What he wishes to say is that if the judgment of the editors should dictate the elimination of a crudity in an article sent for publication, or should briefly comment on, or dissent from the views expressed by the writers of original communications,—and we hope to see these coming thick and fast,—that the writers will not feel sufficiently sensitive to take such criticism as a personal matter. This is what the Associate has to say on this part of his subject.

He has to say also that the editors are never so delighted as when they receive sprightly, clearly written articles for publication ; and we would like to truthfully say that all that come are of this class, but cannot conscientiously do so. Friends who write, try and have clearly before you your subject matter in detail, as well as the subject. To do this will involve labor, with brains and pen ; but better that *you* should work a little or a great deal, to make your meaning clear, than that your reader should labor in vain to understand what the writer intended but failed clearly to express. Unless you are a professional writer it is hazardous to send out your written thoughts without a reviewing, perhaps more than once, and the best composers in the higher walks of literary life go over and over again their manuscript. Take your time about this: your article is not to be patented, and you are in slight danger of being forestalled in the publication of your discoveries. The common expression: "I write hurriedly," is not always perfect candor. Take your time, be sure you have something to say, and say it your very best.

Another word: The editors have pretty good eyes, but they are obliged, such is the poor patronage of dental journals, to work at their chosen calling of dentistry, and are not anxious that the sight which is already severely taxed in operating shall be further strained by illegible copy. Often the difficulty of deciphering manuscript is so great as to cause the reader to pass over some words, or blindly guess at their meaning, in the hope that the printer will make out what the editor cannot. And the printer, though expected to be able to read all things, is but a mortal, and sometimes a profane one. So then, for the sake of the editors' eyes, and the printers' temper, write as plainly and legibly as possible.—These matters do not have special bearing on dentistry, but they do on journalism, and hence we write of them. J. B. H.

A New Dental Quarterly—A New Degree in Dentistry.—Prof. Henry S. Chase, of St Louis, Mo., who for the past year has edited the *Missouri Dental Journal*, announces his withdrawal from the conduct of that Magazine, which is resumed by Drs. Judd and Eames.

At the same time is announced the forthcoming of a *Dental Quarterly*, to be edited by Drs. Chase and Spaulding. The industry and talents of Dr. Chase will doubtless make this one of the most valuable of our exchanges.

The catalogue of another new Dental College—the "Western

College of Dental Surgeons"—is received, located in St Louis: Dr. C. W. Spaulding, Dean. A new feature instituted is the establishment of the degree of "Master of Mechanical Dentistry,' the candidate for this degree to pass examination in Anatomy, Chemistry and Mechanical Dentistry.

The prospectus announces in substance that any one who has earned his degree without the aid of schools is as much entitled to adiploma as those who spend their time in the lecture halls of a college.

nnovations of established usages are too frequent to be startling in this day, but it really seems hardly fair to add to the stock of titles which the one specialty of Dentistry offers, and it can scarcely place us in a more favorable light before the public, professional or unprofessional. We have now in addition to the established D. D. S., M. D. S., (Master of Dental Surgery,) L. D. S., (Licentiate of Dental Surgery,) D. M. D., (Dr. of Dental Medicine,)—and now comes M. M. D. Are there others still? It certainly suggests a want of uniformity in the minds of those instituting degrees as to what the title of a dentist should be. Who can now blame those who put all sorts of rank and title on their signs cards, &c., even to a publication of the order of knighthood!

As to the graduation of applicants who have passed satisfactory examinations, but who studied elsewhere than in dental colleges, it occurs to us that in this day of numerous and accessible schools, located in almost every section of the country, and with all the facilities which they offer for thorough education, it hardly seems a time to take a step which looks like offering a premium to young men to stay away from those institutions, as this seems to do, seeing that they are offered graduation on examination as to qualifications. All who know the subject are fully convinced that, a dental college is, and a private office is not, the place to study dentistry, and while it may possibly be true that occasionally a man is found who from stress of circumstances or other causes cannot attend lectures. but who has thoroughly qualified himself at home for practice, the exceptions are too few to establish such a precedent as this. Besides, the practical qualifications which would entitle one to graduation on these terms would undoubtedly enable their possessor to make his practice sufficiently lucrative to be able to spare the time for lectures.

We are not in a position as a profession, and the colleges are not in a condition to justify a step that will look like a lowering of the standard of requirements on the part of those desiring to enter its ranks. We repeat that dental education is so cheap and the schools so available as to give no excuse to those who really wish to render themselves thorough in theory and practice. It cannot bring good but harm as we see it, to the profession, to education, and to those who are the recipients of the degrees.

A New Method of Pivoting Teeth.—Dr. Bonwill, in the March meeting of the New York Odontological Society, read a paper on Pivot Teeth, in which he introduces and advocates a method apparently advantageous in at least some cases, and possesses decided merit in that it is simple and comparatively inexpensive. The process is simply to enlarge somewhat the opening in the root, having previously treated if necessary, making the canal in the root of such a shape as will retain firmly a filling. An ordinary plain plate tooth is now fitted to this root, with a gold backing upon the pins and a cap of gold to fit the prepared end of the root, these are soldered together, and a hole drilled in the part of the plate directly opposite the root canal, which hole is countersunk on its outer side. A platinum pin is prepared of a size which will pass easily through the hole drilled in the plate. The pin should be long enough to reach from the bottom of the cavity in the root, to a little beyond the outer surface of the plate which is intended to fit over it; this pin has a thread cut on it the entire length, and the lower end is flattened somewhat, to prevent its turning. It is now bent at an obtuse angle backward, that there may be more room for a nut to turn. The prepared pin is placed in position in the cavity, amalgam is packed around it, and allowed to set, care being taken that the relation of the pin to the hole in the tooth is preserved. The operation is concluded by placing a little gutta-percha on the surface of the backing or cap which comes in contact with the stump, and screwing a conical nut down upon the threaded screw, the nut being so prepared as to fit neatly into the countersunk plate. The nut should have a crucial (+) slot in it, that it may be more easily screwed home, and will require tightening after a few days, when it is permanently finished, and may be covered over, if any inequalities occur, with os artificiel. The pin should be platinum, not gold, as the latter would be rendered brittle by the mercury in the amalgam. [We suggest the alloy of platinum and iridium as stronger.—[*Ed. American Journal of Dental Science.*]

A modification of this process is adapted to molars and bicuspids.

Editorial Briefs.—Prof. Taft, (Dental Register,) criticising the amalgam fever, says on the subject: "In nine cases out of ten, when dentists have attempted to write on the desirability and importance of obtaining a plastic material, of universal application, and one that should possess all the qualifications imaginable, they have simply settled down into a fulsome laudation of amalgam, generally, or of some particular form of amalgam, and a condemnation of gold, at least in contrast with amalgam. * * * The burden of the day is amalgam, its efficiency, mode of use, &c. Almost every advocate says it is better than gold, and then he usually squarely contradicts himself before closing. * * During the last thirty years there has been produced upon an average, one new amalgam annually, each of which was better than all others, indeed was about perfect, and so of course could not be superceded. * * The fact that alloys for the most part, and amalgams always, are exceedingly fickle in their behaviour, under varying circumstances has been overlooked, by both those who prepare and those who use amalgam for filling teeth."

He quotes Fletcher as saying, that an "'alloy used for amalgam, whatever its composition, is utterly unreliable unless every ingot is carefully tested for shrinkage, expansion, &c. However good an alloy may be generally, no single sample of it is trustworthy until after a series of tests which cannot be completed in less than three to six months.' And he might have added that even after any given sample is thus tested, where it comes to be combined with mercury, and subject to varying outside influences, such as moisture, heat and electricity, its behavior will lack uniformity.'"

He has seen, he says, many fillings of Fletcher's Amalgam, signal failures. He thinks all amalgams in some mouths oxydize, and in some mouths none will do so.

Medical Progress.—Considerable discussion has been going on in Great Britiain, in the past few months, growing out of an offer on the part of a distinguished homœopathic physician, and a representative man of that school of medicine, to unite the opposing "pathies," or at least bring about a reconciliation between them. The doctrines of Hahneman are scarcely held now by any save the most exclusive, and we had almost said, ignorant of those practicing under that name, and certainly the day of heroic dosing on the part of the allopaths seems over, a result they are not entirely unwilling to credit the other parties with. Absolutism disappears and the field of toleration widens as real scientific knowledge is gained, and we know as dentists, that homœopathy has furnished us with most careful hints in the management of diseases of the teeth. It is not probable that such a union as is proposed will be effected at present at least, but the fact that it is even suggested is an admission of a great advance in medical toleration.

In the *Monthly Summary* will be found a brief abstract from a work by a prominent female physician, of New York City, on the question of "rest during menstruation." As so many females from foreign countries are entering upon the study of dentistry, the conclusions arrived at are important. The book in question is a thoroughly exhaustive and scientific treatise on a subject the writer has had special advantages for investigating. The work may be worth the attention of those who are interested in entering upon a profession so severely taxing the energies, and involving so much standing upon the feet.

Inhibition of Publication and its Results.—It is stated as a curious result of a late attempt at suppressing a book in England, that its sale rose from 500 copies before the indictment was lodged, to 125,000 copies since!

BIBLIOGRAPHICAL.

An Index of Diseases and their Treatment.—By Thomas Hawkes Tanner, M. D., F. R. C. P., Etc. Second Edition Revised by W. H. Broadbent, M. D., F. R. C. P., Etc. Publishers: Lindsay and Blackiston, Philadelphia.

This work is so arranged as to present a brief, but comprehensive, and classified description of diseases and therapeutics, and must prove a useful adjunct to the more voluminous treatise. Under some sixty general divisions, are included nearly one thousand diseases, a brief description of the symptoms and treatment of each being given, which renders the work a great assistant to the medical practitioner. An appendix of formulæ occupies some one hundred and fifty pages, describing the preparation of Aliments, the composition of Alteratives and Resolvents, Antacids, Astringents, and all other articles of the materia medica in general use, ending with Climates for Invalids, and Mineral Waters.

While the purely medical affections are correctly treated, the same cannot be said of the dental, as the treatment of odontalgia recommended is by no means such as an educated dental practitioner would pursue. The author, however, is not behind the majority of his medical brethren in this respect, for many of the most prominent are sadly wanting in their knowledge of the dental organs, at least so far as their diseases are concerned.

The Physicians Visiting List for 1878.—Lindsay and Blackiston, Publishers, Philadelphia.

As an evidence of the popularity of this List, it is only necessary to say that this is the twenty-seventh edition. It is not only useful to the medical practitioner, but also to the dental as an appointment book.

Transactions of the American Dental Association for 1876.

This volume contains the proceedings of the centennial meeting held in Philadelphia, and contains some two hundred and thirty pages. We regret, however, that its publication was so long delayed, as it did not appear until nearly the time of the 1877 meeting, had arrived; consequently the contents were almost one year old.

Transactions of the Illinois State Dental Society for 1877.

This volume contains several interesting and valuable papers. We commend the name "Society" for all State organizations: let the national ones only be styled "Associations."

MONTHLY SUMMARY.

The Question of Rest during Menstruation.—Mary P. Jacobi, M. D., Prof. of Materia Medica, Women's Medical College, N. Y., in a recent work on the above subject, says: Judging by statistics we should say that immunity from menstrual suffering was to be expected in proportion to:

"1. The vigor of health during childhood and the soundness of family history, especially in regard to freedom from constitutional taint of scrofula, consumption, or rheumatism, or family tendency to uterine disease.

2. To the degree of exercise taken during school life.

3. To the thoroughness and extension of the mental education.

4. To the degree to which general health and capacity for exercise were maintained after cessation of study.

5. To steadiness of occupation.

6. Finally to marriage at a suitable time."

"When persons in good health suffer severe menstrual pain, this is nearly always dependent upon some anatomical imperfection of the uterus. When persons in delicate health are free from menstrual distress it is because the supplemental wave of nutrition does not rise sufficiently to greatly increase general vascular tension, or because the uterus is too slightly hyperæmiated to excite reaction." "Whenever women exhibit mental irritability and consequent weakness at, or before, menstruation, it is a proof that the resistance of their nerve centres is weakened, below the normal standard, sometimes congenitally and by inheritance. In these cases rest is desirable during whatever period of the month the nervous excitement may be experienced, but this will be more frequently through the two or three days preceding the hemorrhage, than at the time of the flow. In slighter cases rest is unnecessary; in those more severe it is in itself useless, i. e. other measures must be taken in order to cure the disease. In those cases of congenital hysteria where a cure can not be effected, it is evident that the women *are* permanently unfit to bear severe responsibility or to undergo mental strain." M. B. M.

Simple Remedy to Stop Bleeding.—Mr. F. E. Forster, of this city, informs us that lately he cut himself, and trying to stop the bleeding, he did not succeed, notwithstanding he tried to do it in several ways; finally the idea struck him to put on some dry plaster of Paris, which happened to be at hand. It stopped the bleeding at once, while it only caused some stinging sensation, lasting a minute or two, but no ill effects were experienced. He requests us to publish this for the benefit of others, and we do so cheerfully, thanking him for the good example he has set by giving this communication.—*Druggists Circular.*

The Perils of the Cigar.—Of course there are plenty of men who believe that smoking is positively injurious. We have had it proved over and over again that the man who smokes is sure to die. Even the living smokers who have by mistake grown old cannot dodge this dreadful and indisputable issue. Then again, before they die, these smokers are said to be addicted to loss of memory (forgetting their promises to reform, no doubt,) lack of will power (to stop the habit perhaps,) loss of sight, loss of muscular power, taste, smell, feeling, procreative power, and finally idiocy. All this is dreadful and causes us to rejoice that, for a time at least, we have given up the use of tobacco. But there is really a serious aspect to this matter which deserves more than ordinary attention, and that is the liability of syphilitic contamination through the medium of the weed. Recently an English journal cited the case of a young girl, a manufacturer of cigars, who with a chancre upon her lip moistened with saliva the tips of all the cigars she made for a period of three days. This is a well-authenticated case, and it is impossible to say how many more there are like it which are constantly spreading the dreadful poison to unsuspecting pleasure-seekers. The abominably disgusting practice among tobacco-strippers of moisting the leaf with spray from the mouth is doubtless an occasional, if not a common cause of infection.—*Med. Record.*

Hydrobromic Ether as an Anæsthetic.—Rabuteau, in a memoir read before the Academie des Sciences, states that he has investigated the physiological properties and mode of elimination of hydrobromic ether. He has satisfied himself that this anæsthetic agent, which possesses properties intermediate to those of chloroform, bromoform, and ether might be advantageously employed to produce surgical anæsthesia. The hydrobromic ether is neither a caustic nor an irrritant. It can be ingested without difficulty, and applied without danger, not only to the skin but to the external auditory meatus and to the mucous membrane. It is eliminated completely, or almost completely, by the respiratory passages, in whatever way it may have been introduced into the system.—*Lancet.*

The Percussion of Bones.—Percussion of bones is employed, either to find out the painful point in bones or to diagnose, by the character of the note produced, the pathological changes that have taken place in the bone. Lucke says he has made use of percussion only in the long bones, and has arrived at the following results: The epiphysis gives a higher note than the diaphysis. The corresponding bones of each side give out the same note. Freshly united fractures give out a deeper note. Cronic central ostitis gives a deeper note than normal. In a case of chronic gonitis the diaphysis of the affected tibia, which was porous, gave out a much higher note than the opposite healthy one. The percussion had better be performed with the extremities hanging, and in the lower extremities not touching the ground.—(Prof. Lucke, quoted in *Schmidt's Jahrtuche.*

On Ranula.—In a contribution [*Gazette Hebdomadaire*, No. 16, 1877,] giving short clinical reports of six cases of ranula observed by himself, Prof. Michel, of Nancy, discusses the nature and situation and the surgical treatment of this form of new growth. In each of these cases excision of the cyst was practised with complete success. From observations made during these six operations, and also from dissection of a ranula in a dead subject, the author has been convinced that in the majority of instances of this affection, the cyst in its development has no connection with any of the salivary ducts. The view that ranula may be due to dilatation of the ducts of the sublingual or submaxillary glands is not altogether rejected; but it is held that, in the majority of cases, the cyst has some other seat of origin. In all the seven specimens examined by the author there was an absence of any connection between the cyst and the salivary canals, and in each case the tumour had evidently originated in the areolæ of the connective-tissue about the frenum of the tongue. The so-called capsule of Fleischmann, fluid distension of which is supposed by Tilaux and other French surgeons to constitute ranula consists, according to Prof. Michel in nothing more than an occasional and abnormal dilatation of one or more of the areolæ of the sublingual connective tissue. On microscopical examination of the contents of the cyst in the above-mentioned seven cases, tesselated epithelium and crystals of cholesterin were found in some, and globular epithelium in others. In no specimen was the author able to obtain a reaction resembling that produced by saliva. Prof. Michel holds that expiration by the knife ought to be regarded as the general method of treatment for ranula; and he argues that this proceeding first recommended by Heister, is free from many of the objections that have been raised against it by Sedillot. Far from being an impracticable operation in ordinary cases of ranula, it may, even in cases of severity and long duration, be readily and safely performed. Excision, though more difficult than the usual methods of surgical treatment, such as injection of iodine, batrachosioplasy and incision and cauterization combined, is attended with speedy as well as with most permanent results. No relapse had occured in any of the six cases treated by the author, five of which have been under his observation from time to time during many years. Two methods of extirpation are mentioned; in one, the ranula is first freely incised and the walls of the emptied cyst then dissected away; in the other the cyst is removed intact, together with its contents. The choice between one and the other of these methods should be guided by the thickness of the cyst-walls. When this wall is thin, preliminary incision is to be preferred; when it is thick extirpation without incision should be practised.—*Brit. and Foreign Med.-Chir. Review.*

On Lipoma of the Tongue.—Tizzoni and Parona describe in the *Annali Universali di Medicina e di Chirurgia* for March, the case of Professor C. Gianni, aged 74, who had had a growth about a year, situated under the anterior and under surface of the tongue, on the right side. When he had had it six months it was the size of a filbert, and, thinking, it was a collection of pus, he punctured it himself, but let out only a little blood.

The tumour then rapidly grew, and attained the size of a large walnut, becoming very inconvenient, and causing constant spitting of saliva. Removal was effected by enucleation, and the nature of the growth was ascertained to be that of an ordinary soft lipoma. Microscopic examination confirmed the naked eye opinion. The patient did well. A *resume* is given of all the recorded cases of lipoma linguæ.—*London Med. Record.*

To Remove the Smell of Carbolic Acid.—It is recommended to rub the hands with damp flaxseed meal. The same substance it is said, will remove other odors.

Chloral.—Dr. Oscar Liebriech charges that American chloral is especially badly prepared. It should not be in cakes, but crystals.

Doctors of Medicine.—The medical colleges of this country graduated this year 1442 students. Truly might Abertheny's question be repeated: " Young gentlemen, what is to become of you all ? "

Cause of the Breaking Down of Teeth in Gestation.—Dr. J. Williams, Ohio State Dental Society, in a paper on the treatment of teeth during gestation and lactation, thinks that the primary causes of the breaking down of the teeth at these periods is due to " the premature age at which childbearing is commenced ; systemic unfitness for the reproductive function from other causes, and mental infelicity."

Nitrate of Silver and its Specific Discoloration of the Skin.—Prof. Pepper, (College of Physicians, Philadelphia,) calls attention to the fact that the earliest sign of the peculiar effect of nitrate of silver—the staining of the skin,—" argyria," is a peculiar blue line on the gums. The hue is darker and more decidedly blue than the " lead line," and so may be diagnosed. The salts of copper, it is stated, will produce a similar line on the gums.

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ARTICLE I.

The Action of the Nervous System.

BY JOHN J. CALDWELL, M. D., BALTIMORE, MD.

Read before the American Dental Convention, Oakland, Md. August 17th, 1877.

"The Brain is not the Sole organ of the mind, for wherever gray nerve matter functionates, mind is a resultant.—HAMMOND.

"We can no more stop thinking than we can stop breathing."—PENDLETON.

"There is nothing great but man; there is nothing great in man but mind."—HAMILTON.

"Soul, immortal as its sire, can never die."

In the words of the great Physiologists, Carpenter, Draper and Dalton, the great sympathetic distributes its nerve force to organs over which consciousness and the will have no immediate control: for instance the functions of the heart, kidney, and liver; the focusing of the light in the eye; the dilation and contraction of the pupil; the protection of the olfactory membrane; relaxing and stretching the tympanum; dilating and contracting the vascular system and the government of nutrition, temperature, etc.

As a typical illustration of involuntary force we will cite its influence on the heart's action—say for seventy years—and, for convenience fix the pulsations at 60 per minute. Thus we will have the proposition of 60 x 60—3,600 beats per hour. Again 3,600 multiplied by ten equals 36,000 beats in ten hours; or in the words of the learned Draper, this little organ can execute "three thousand million beats without a stop; and propel a half million tons of blood, and momentarily wasting, repairs its own waste all this time."

The mathematical rhythm of four moving cavities, the perfect closure of its mitral and semi-lunar valves, and the regurgitating play of its tricuspid, have never failed. Much more could be said of other vital organs, all under the control of the involuntary powers. In the face of all these facts, how strikingly true is the saying, "How fearfully and wonderfully we are made;" for, in regard to the heart, we have but to note that its nerve supply springs principally from three little ganglia and a few nerve fibres originating from the brain, spinal cord and sympathetic.

How delicate the source, how fragile and thread-like the conductors, how readily implicated, how sudden and certain the result. Yet, in death from such cause, how obscure the character of the lesion!

INVOLUNTARY ACTS OF EVERY DAY LIFE.

For many of the following facts I am indebted to Dr. Pendleton, of Belfast, Maine, taken from a reprint of his annual address, before the State Medical Association, (June 28th, 1870.)

For a plausible explanation of the causes and sources of involuntary actions of man, I am indebted to a paper, by Hammond, entitled "The brain not the sole organ of the Mind," published in the Journal of Nervous and Mental Disease," Chicago, 1876.

Man sleeps, dreams, awakes and oft times masticates, works, swears and prays involuntarily. Says Pendleton, a day seldom passes when we do not find that we have not done some slight thing, without knowing it, such involuntary acts as that indicated by the boy's reply, "I didn't whistle, it whistled itself," and so from every stage of life, to the grandmother knitting, asleep in her chair, we have similar illustrations, —the girl at the sewing machine watches her work, but the treadle runs on from habit, not thought, yet her foot stops instantly when she changes her work.

> The woman singeth at her spinning wheel;
>   A pleasant chant, ballad or bacorolle—
> She thinketh of her song, upon the whole,
>   Far more than of her flax ; and yet the reel
> Is full, and artfully her fingers feel
>   With quick adjustment, provident control,
> The fibres too subtly twisted to unroll,
>   Out to a perfect thread—."

In the absent-minded person however, habit works independent of control, and takes advantage of his abstractions, to lead his feet into the ditch, while his head is among the stars; or lets him swallow the dice, and throw his glass of wine into the back-gammon board.

Huxley tells the story of a French Soldier, who was shot in the left parietal bone, and in consequence became paralyzed on the opposite side of the body. Recovering in two years, from the paralysis, he entered upon a double existence. In his normal life he was perfectly well, and a capital hospital attendant. For a day or two in each month, he passed into another life, without warning or intimation. In this abnormal existence he was active, moved about as usual, and was to all appearances the same person as in his normal state. He went through all the ordinary habits of his life, yet during what may be termed this artificial, unreal existence, he neither saw, tasted, heard or smelt; nor was he conscious of anything whatever, and there was only one sense in a state of activity, that of touch, which was exceedingly delicate. If an obstacle obstructed his way, he knocked against it, and went to one side. If he was pushed in any direction he went straight on.

Another illustration is that of an old mule that had spent its life grinding bark, and, when too old for service, was turned out to grass. At stated intervals, every day he was observed to leave grazing, and travel around and around an apple tree in the pasture. We can find individuals or even nations, whose life is hardly less mechanical than that of the poor soldier, or the broken down mule.

INVOLUNTARY THOUGHT.

But we need not limit ourselves to mere physical action. Recent experiments and investigations rapidly bringing us to the conclusion that a large number of the acts of the mind, as well as of the body, may be produced under a two-fold form; that there are two co-ordinate modes of mental activity, the one conscious and the other unconscious. We can no more stop thinking than cease breathing. Since the time of Leibnitz, the leading metaphysicians of Germany, and such as Hamilton and Mill, of England, have affirmed that the mind may undergo modifications of great importance, without being itself conscious of the process.

It is familiar to every one that when we have been trying to recover a lost idea and have abandoned the effort, some time after, when busily engaged upon some other subject, it comes to us unbidden. The best solution of a perplexing question is often obtained by an unconscious process, where the attention has been completely withdrawn. Speaking upon this subject, Dr. Holmes relates an anecdote of Lord Polkomente, a Scotch judge, who, being asked how he prepared himself for a judicial decision replied: "Ye see I first read a' the pleadings; and then, after letting them wamble wi' the coddy in my wame, two or three days, I gie my ain interlocutor."

When an author of a late work on "Democracy and Monarchy in France," was charged with a certain passage verbatim from De Tocqueville, he could only say: "I believe there is such a thing as unconscious memory." Every one has experienced the advantage of a night's sleep in modifying the decisions of a previous day.

A dream has frequently supplied the clue to a labyrinth in which the mind was hopelessly lost during its hours of wakefulness. Carpenter mentions the case of an eminent judge, who, sleeping in a strange house, dreamed that lizards were crawling over him. He could not imagine what had originated such a dream, until in going into the apartment through which he had passed the previous evening, he noticed a mantel clock, on the base of which were figures of crawling lizards. This he must have unconsciously seen, and the sight must have left a trace on his brain, though it left no record in his memory. Dreaming often takes for its materials traces left by occurrences long since past.

Galen was accustomed to attach much importance to the medical intelligence of dreams. He declares that a man dreamed that his left thigh was transformed into a marble stone, and within a short while thereafter, he actually lost the use of his member by a dead palsy. A wrestler dreamed that he was in a vessel filled with blood and so deep that the crown of his head was scarcely visible. Galen inferred that the man was in want of a liberal blood letting, and by that means the pleurisy from which he was suffering was cured. Genius has often confessed that its sleeping self, surpassed its waking self.

Now the best explanation for all these strange phenomena of involuntary acts, deeds and thoughts is to be found in the admirable reasoning of Hammond in his theory that "Brain is not the sole organ of the mind," when he argues that we have no evidence to show that the mind can exist independently of the nervous system. On the contrary, every fact in our possession bearing upon the question of their relation, goes to prove that where there is no nervous system there is no mind; and where there is injury or derangement of the nervous system, there is corresponding injury or derangement of the mind. When we inquire into the matter of the absolute and relative quantity of gray nerve tissue, we find that in this respect, man stands pre-eminent, and and it is to this fact that he owes the great mental development which places him so far above all other living beings, for it is the gray tissue which originates mind.

The white nerve tissue, as is well known, serves only for the transmission of impressions and impulse. Unless regard is paid to this point, we would certainly fall into a serious error, in determining the relation existing between the mind and the nervous system, but having it in view, the connection is at once clear and well defined, there being no exception to the law that the mental development is in direct proportion to the amount of gray matter entering into the composition of the nervous system of any animal of whatever kind. But all the gray tissue of the nervous system is not confined to the brain. A large proportion of it is found in the ganglia of the sympathetic, and some other nerves, and an amount, second only to that of the brain in quantity; and indeed, in some animals a large amount is present as an integral constituent of the spinal cord. By the term mind, I understand a force developed by nervous action. It bears the same relation to gray nerve tissue, that heat, electricity or light do to chemical or mechanical action. Why mind should result from the functionation of gray nerve tissue is no more a mystery than the fact that the mixing of water with sulphuric acid developes heat, or the rubbing of a piece of sealing wax with a piece of silk causes the evolution of electricity. All are equally beyond our understanding. All are equally ultimate facts in science and speculations; in regard to the rationale of these all speculations are equally vain and unprofitable.

All the manifestations of which the mind is capable in its fullest development are embraced in four acts: perception, the intellect, the emotions, and the will. Thus an individual may have a perception without any intellectual, emotional or volitional manifestation; and so the intellect, the emotions, or the will, may be brought into action without the necessary participation of each other. It is, however clearly established that all mental processes, of any kind, have their origin in perception, and that an individual born without the ability to perceive, either from defects in the external organs of the senses, or of the central ganglia, by which impression on these organs are converted into perceptions, would be devoid of intellect, emotion and will; would be in fact, lower in mental development than the most degraded types of animated beings; but let us suppose a case of a man with a disease of the upper part of the spinal cord, of such a character as to prevent its conveying volitional impulses from the brain to the muscle of the lower limbs. Now, let the soles of the feet be tickled, and we will find that they are drawn away, and generally with much more force than when the brain is allowed to act. Such a movement is probably one of a true reflex character. It is spasmodic and indeterminate, being more extensive than is necessary. But let us go still further in our suppositions, and imagine that in such case the mere drawing away of the foot was not sufficient to escape the irritation, and that the individual deliberately lifted up the other foot in the attempt to remove the offending object, and that this action, not proving adequate, he made two or three leaps, in order to escape. What will we call these movements? Would they not be evidence of perception and will? Would they not be movements performed with a definite purpose, the very best possible under the circumstances, to escape from the irritation, even though the brains were ununconscious of them. It must be remembered that consciousness is not the necessary accompaniment of volition.

Warm-blooded animals are, for many reasons, not suitable subjects for experiments, such as are required in the phenomena under consideration, but in some of the lower animals, as the frog for instance, we find those conditions present which fit them for such investigation. Thus, if the entire brain be removed from a frog, the animal will continue to perform those functions which are immediately connected with the maintainance of life. The heart beats, the stomach digests, and the glands of the body continue to elaborate the several secretions proper to them. These actions are immediately due to the sympathetic system, though they soon cease if the spinal cord be materially injured. These movements are calculated to excite astonishment to those who see them for the first time, and who have embraced the idea that all intelligence resides in the brain. For instance, if in such a frog, the web between the toes is pinched, the limb is immediately withdrawn; if the shoulder is scratched with a needle, the hind foot of the same side is passed to remove the instrument; if the animal is held up by one leg it struggles, if placed on its back, a position to which frogs have a great antipathy, it immediately turns over on its belly. If one foot be held firmly with a pair of forceps, the frog endeavors to draw it away. If unsuccessful it places the other foot against the instrument and pushes firmly in the effort to remove it. Still not succeeding, it writhes the body from side to side, and makes a forward movement.

All these and even more complicated motions are performed by the decapitated alligator, and infact may be witnessed to some extent in all aimals. I have repeatedly seen, says Hammond, the headless body of the rattlesnake coil itself into a threatening attitude, and when irritated, strike its bleeding trunk against the offending body. Upon one occasion a teamster on the Western plains had decapitated one of these reptiles with his whip and while bending down to examine it more carefully was struck by it full in the face. So powerful was the shock to his nervous system, that he fainted and remained insensible for several minutes. According to Maine, de Biran Perrault, reports that a viper, whose head had been cut off, moved determinately towards its hole. This subject has been well studied by Dr. Towler, of New Orleans, Fluger, Paton, Onimus, and several others.

Now when we come to man and observe the experiments which are constantly being made for us, both in health and in disease, we cannot avoid placing the spinal cord much higher as a nerve centre than it is usually located by physiologists.

In anni-cephalic monsters, we have interesting examples of the fact that the spinal cord is possessed of perception and volititional power. Syme describes one of these beings which had lived six months. Though very feeble, it had the faculty of sucking, and the several functions of the body appeared to be well performed. Its eyes clearly perceived the light, and it cried if the candle was extinguished. After death the cranium was opened and there was found to be an entire absence of the cerebrum, the place of which was occupied by a quantity of serous matter, contained in the arachnoid. The cerebellum and pons varolii were present.

Panizzat, of Pavia, reports the case of a male infant, which lived eighteen hours. Respiration was established, but the child did not cry, nevertheless it was not insensible. Light impressed the eyes, as the pupils acted. A bitter juice put into the mouth was immediately rejected. Loud noises caused movement of the body. On post-mortem examination there was found no vestige of either cerebrum or cerebellum, but the medulla oblongata and pons varolia existed. There were no olfactory nerves; the optic nerves were atrophied, and the third and fourth pairs were wanting. All other cranial nerves were present.

In conclusion, Hammond deduces these propositions:

First. That of the mental faculties, perception and volition are seated in the spinal cord, as well as in the cerbral ganglia.

Second. That the cord is not probably capable of originating mental influence independently of sensorial impressions. The same may be said of the brain.

Third. That as memory is not an attribute of the mental influence evolved by the spinal cord, it requires, unlike the brain, a new impression, in order that mental force may be roduced.

Dreams should be considered as involuntary acts of the brain, greatly influenced by the sympathetic, as the condition of the digestion modifies their character. A patient once applied to Dr. Abernethy in consequence of continually dreaming of his grandfather. "What do you eat so late for? What do you eat at bed time?" asked the doctor. "Not much sir, only half a mince pie." "Go," says Abernethy, "eat a whole one, and you will dream of your great grandfather."

If the sympathetic has so much to do with our dreams, we can then better account for the beautiful images produced by opium and other narcotics, stimulants, etc.

First. How belladonna dilates the pupil, how opium contracts it by their direct influence on the sympathetic, and by the sympathetic, reflex action on the brain.

In my next paper, we will consider the diseases of the vasomotor and some other important derangements of involuntary action.—*Dental Register.*

ARTICLE II.

The Development of Dentine.

BY C. SIHLER, M. D.

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The view then at which I have arrived, after investigating the dead and living dentine, as to the structure of this tissue is 1st, the essential parts of the living and growing dentine, the oval elements or pink bodies attached to the opening with their nuclei of the dentinal canals, and in direct connection with the dentine. 2nd. There can be recognized in this tissue the dentine, as can elsewhere the germinal matter or bioplasm and the formed matter. The former has been pointed out by the staining, and has been shown that it exists in the dentinal canals, the odontoblasts and their nuclei. The latter, *i. e.*, the formed matter we have shown to consist of two kinds of substances, by the aid of muriatic acid: First, a homogeneous one in which the lime-salts are infiltrated, a second one, of the nature of yellow elastic tissue substance, making up the walls of the dentinal tubules, and being in continuity with the odontoblasts. That it is prolonged into (or on) bioblast, we have shown by isolating an odontoblast while in connection with the dentinal tubules, and that this process of the odontoblast is not altogether germinal matter, or merely a semi-fluid soft mass; can be proved by the stretching it will permit. Where the germinal matter ends, and the formed matter begins, is just as difficult at times to say, as where day ends and night begins, for one must always bear in mind in using this term, that the distinction made between forming substance or bioplasm, or germinal matter, and formed matter is a termination not made according to the idea (category) of form and appearance or locality, but according to the idea of force or substance. Hence, we may have particles of formed matter and particles of germinal matter mixed up. The body of the odontoblast and the material in the dentinal tubules, seem to me to be of this nature, *i. e.*, mixed, while the nucleus seems to me to be active bioplasm. In making histological investigations, one must not forget that one is interrupting nature and interfering with processes. I look upon the odontoblast as though here the germinal matter was being converted into formed matter, and was being separated into the elastic material, which when condensed, will make up the walls of the tubes and side tubes,—and into the homogeneous glue-like substance making the general matrix of the dentine, and I look upon the contents of the dentinal tubes which can be stained, as upon germinal matter where change into formed matter is slowly going on, while the nucleus, I consider, as the agent which converts pabulum or food into germinal matter.

This view in the structure of dentine will agree with that of Beale, if Beale will admit that there is a special wall to the dentinal canal, which is a direct production of the germinal matter, as the fibre of the ligamentum nuchae is a [illegible] of the bioplasts attached to them, and which is made [illegible] with the general glue-like matrix of the dentine.

This view will agree with that of Salter, if Salter will call his "tubular fluid" in the dentinal canals germinal matter, and admit that he does not prove the calcification of the dentinal tubes.

This view will agree with that of Waldeyer, if Waldeyer admits that his dentinal sheaths and the fibres which he describes as possessing a remarkable elasticity, are one and the same thing.

This view will agree with that of Koelliker, if Koelliker admits that his dentinal tubules (Neumann's sheaths) and his processes of the odontoblasts are one and the same thing.

This view agrees with that of Tomes, if Tomes will admit that he fails to prove that there is a dentinal tubule, and admit further that his soft fibril is one and the same thing with the dentinal tubule.

These three views will agree with mine, if they will allow me to call the contents or inner portion of their soft fibril bioplasm—if they allow me to call the outer portion of their fibril the dentinal tubule, and the material which according to their own statements can be stretched so much,—yellow elastic tissue substance.

But I will quote the authors themselves, and try to point out where and why I am not convinced by their arguments. Tomes says: "I had, however, but little expectation of finding that one of the most important points in dental structure had been overlooked, namely that each dentinal tube is permanently tenated by a soft fibril, which after passing from the pulp into the tube follows its ramifications. With proper care in manipulating, nothing is more easy than to demonstrate the existence of the dentinal fibres in any tooth which has recently been extracted. If a thin section be made in a plane parallel with the direction of the tubes, and the sections be afterward torn in a direction transverse to that of the tubes, many of the fibrils will be seen projecting from the torn edges. (Fig. 124.) It is desirable in repeating the experiment to place the decalcified section upon a slide before tearing, as in moving it from the surface upon which it has been torn, some of the longer fibrils may be folded back upon the body of the specimen, and thus become obscured from view. Where the separation between the torn surfaces has been but slight, we may often see a fibril unbroken stretching across the interval, which separates the orifices of the tubes to which it belongs.

In order to demonstrate the connection of the fibrils with the pulp, fine sections should be made with a sharp knife from the edge of the pulp cavity. In this manner I obtained the specimen from which Mr. DeMorgan has been kind enough to draw the accompanying illustration, showing the fibrils stretching from the pulps to the displaced dentine, and some of them passing out on the other side of the fragment. That the fibrils proceed from the pulp may be seen by carefully fracturing a fresh tooth with as little displacement of the fractured parts as possible, and then by slowly removing the pulp from its place in the tooth, we shall be enabled to examine the fibrils which have been drawn out from the tubes. By this procedure some of the fibrils will be withdrawn from their normal position in the dentine in the greater part of their length, a few of them retaining short lengths of their branches, but sufficiently long to show that they have come from the branches of the dentinal tube."

These same arguments it will be noticed we have used above in proving the presence of the dentinal tubule, and have found the same appearance in dead teeth. We have seen when describing the nature of the dead and dry dentine, that a tubule and a fibril cannot be distinguished one from another by merely being seen, especially along their sides. Further we have shown that by decalcifying, the fibrils apparently drawn out from the dentinal canal (I do not say tubes) are identical with the tubes themselves, and all the phenomena described by Tomes can be produced by tubules as well as by fibrils.

Tomes quotes Koelliker, who gives facts supporting our view, but I fail to see that Tomes either sees the point or refutes it. He quotes the following, viz:

"Prof. Koelliker in his account of the development of dentine, describes and figures processes extending from the peripheral cells of the dentinal pulp in developing teeth, but he does not recognize the tube fibril; indeed he, as before cited describes the tubes as filled with fluid. Mr. Lent in a paper published in 1855, gives a similar description to that published by Mr. Koelliker, and says that the cell fibres are but seen in teeth which are but little advanced in development. Mr. Huxley states that in a solitary instance he observed a fibre pass a short distance into the dentine."

"Both, Mr. Koelliker and Lent, regard the processes which they observed extending from the peripheral cells of the pulp in forming teeth, as organisms for the development of the dentinal tubes. The latter author, near the conclusion of his article on the development of dentine, states that the processes of the cells are the dentinal tubes. He observes further on that the fact first observed by Mueller and then by Koelliker, that the dentinal tubules possess separate walls, which can readily be isolated and explained by the history of the development—the wall of the dentinal canal is identical with the cellular membrane of the ivory cell."

If any one else understands why Tomes quotes Koelliker, he accomplishes more than I can. To me it appears that this quotation might have shown to Tomes that it is impossible to recognize his soft fibril, that the arguments given to support it, will support Koelliker's and Lent's views a good deal better than his own.

Salter takes the same views of Tomes' soft fibrils. We can in giving his criticism at the same time get Salter's view of the nature of dentine. He says, viz:

"Dentine or ivory, which constitutes the bulk of the tooth is a tissue of bony hardness; it consists of earthy matter to the extent of not less than three fourths of its weight. Histologically it is composed of a series of minute tubes about 1-9000 of an inch in diameter, radiating from the central hollow chamber or pulp cavity in which is lodged the soft vascular organ the pulp, which is mainly concerned in the nutrition of the teeth. Between the dentinal tubes is a hyaline structure called the intertubular tissue. The tubes pursue a wavy course and branch, more or less especially in the crowns of the teeth near the surface, and occasionally they exhibit dilatations somewhat like bone lacunæ.

The dentinal tubes have extremely thin walls, which can scarcely be said to be visible in the hard tissues when seen in profile, but which in transverse section as viewed by high powers of the microscope display a broad brilliant ring of considerable thickness around each. The appearance is an optical illusion, and has given rise to much error in interpreting the histological elements of dentine. Whether the broad ring is the result of the curious phenomenon of irradiation or the diffraction of light by the thin cut edge of the tube, I am not prepared to say. But the appearance is not without parallels, which are thus explained. This fact was first pointed out by Henle, in 1841, and is easy of confirmation. It can be demonstrated both by analysis and by synthesis. In some fractures of sections of dentine, their fine tubes are seen standing out rigid and calcified from the broken edge. The animal basis of the dentinal tubes and that of the intertubular substance are different, the former is considerably denser, and after decalcification strong hydrochloric acid will remove the intertubular substance, or render it absolutely transparent—thus the tubes can be isolated, and their minute diameter corresponding with the dark dentinal tube, as seen in profile view of hard sections is at once recognized. If tubes thus distinctively free from all surrounding walls be traced along their course, occasionally some are seen turning their broken edge towards the observer when the rings in question are apparent and the illusion is manifest.

Synthetically this question of histology is demonstrated with equal clearness. In studying the development of dentine it is found that upon the formative pulp, there is arranged a series of columnar cells, constituting the membrane eboris, from the dentinal extremity of which minute tubular threads project, and as the dentine forms from without inwards, these are prolonged centripetally, a homogeneous blastema separating them, and being calcified with them. No other elements hitherto discovered enter into the formation of the dentine, and the minute tubes freed by the decalcification and the solution of the intertubular tissue in dentine, through the action of hydrochloric acid are identical with the thread like prolongation seen on the ends of the columnar cells of the dentinal pulp. These minute tubules of dentine when free and soft, have a certain resemblance to nerve fibres, and this circumstance combined with the belief that the luminous rings around the tubes represent the walls of comparatively large hollow canals, has led a distinguished microscopist to conclude that they are nerves occupying the cavities of such canals, and unaware that histological facts had been recorded both in description and illustration by Henle long previously, he presented to the Royal Society a memoir on the presence of fibrils of soft tissue in the dentinal tubes, "and in that memoir he speaks of them as organs of sensation. But the truth is that they are the dentinal tubes themselves, and there is nothing whatever separating the bodies from the intertubular substance. In the observations made by this author, great stress was laid upon the examinations being made on perfectly fresh specimens, so that the soft structures may not have suffered injury or decay. The minute tubules may, however, be demonstrated just as well in the oldest specimen of dentine. The accompanying illustration is from a specimen prepared by myself of a portion of decalcified dentine from the tooth of an ancient Briton, that had been entombed probably for not less than 2,000 years, all soft uncalcified tissues must have perished for ages."

"The dentinal tubes are hollow and appear to contain a dense fluid plasma, and further on, the axis of the tube therefore, whatever may be its disputed nature being occupied by a fluid."

So far Salter, and I will say that I agree with his arguments against the views of Tomes, but have to remonstrate as regards a few statements. I am by no means convinced that the dentinal tubule is calcified; there is no proof given, and from the very nature of the material of which the elastic tissue is composed, I think it must be uncalcified. As far as 2,000 years are concerned, time is nothing, and we know that muriatic acid speedily dissolves the homogeneous matrix and for quite a time seems powerless against the tubes, and further the very existence of a tooth speaks for the possibility of the presence of the yellow elastic, which can stand certainly more acid and alkalies than the glue or intertubular matrix of dentine, and if it can stand more of chemical action, why not more time? The limesalts are not such powerful preservers. I must object to simply calling the contents of the tubes fluid, dense plasma and to saying after describing the tubes and intertubular substances, "no other element enters, etc.," that is reasoning just as if one did not recognize the nucleus in a liver cell, or the connective tissue corpuscle in fibrous tissue, or the nuclei in muscle and nerve. As far as the description of the formation of dentine is concerned it is good enough as far as it goes, but does not mention the formation of the side tubes.

But Tomes gives some other facts, some of which Salter also quotes which are of importance; he says, if a fibril be examined in its natural condition by the aid of a $\frac{1}{8}$ object glass, it will be found to consist of an almost structureless tissue, transparent and of a comparatively low refractive power. In glycerine the fibrils are scarcely visible. At present it admits of doubt, whether they are tubular or solid. In some cases there is an appearance of tubularity, but being cylindrical this may be a mere optical effect. When accidentally stretched between two fragments of dentine, the diameter of the fibril becomes much diminished, and when broken across, a minute globule of transparent but dense fluid may sometimes be seen at the broken end gathered into a more or less spherical form. These appearances may be explained by assuming that the fibril consists of a sheath, containing a semi-fluid matter similar to the white fibrillæ of nerves, etc."

It is somewhat surprising to see Tomes calling a thing which can be stretched so much as it can, and of diameter which is diminished by stretching, and which seems to contain a dense fluid,—a soft fibril. The trouble with Tomes' description of dentine is, that at first he assumes the dentinal tubes, then, when he comes across them in reality, he takes them for something else, namely, fibrils. I think it will be noticed that his dense fluid in his soft fibrils corresponds to the germinal matter in the tubes, his soft fibrils, or more accurately the outer dense portions of his fibril, are our dentinal tubes.

Koelliker, who if I understand him rightly, had entertained similar views as Salter on dentine, has changed his views in the last edition of his work on histology, and on page 336 says, " although I had been the first one who had isolated the dentinal tubules to a great extent, I was afterwards misled, after Tomes had described a soft fibril in every dentinal tubule, to take the tubes which I had produced and those fibrils for one and the same thing, against which identification Neumann raised objections. He showed in a most excellent little work that the dentinal tubules had special calcified walls (dentinal sheaths Neumann,) and that these contained in their interior a soft fibril. (Tooth fibril, fibre of Tomes.) Although recently H. Herbs has adopted my latter views, I cannot but think that Neumann is in the right. The arguments are: 1. " If by boiling in caustic potash of sections of teeth, or by prolonged putrid maceration of whole teeth, the soft parts of the teeth are destroyed, the walls of the dentinal canals can after the removal of the limesalts be brought into view by aid of the measures which I mentioned, while the fibrils can in no way be shown."

Here I would ask: 1. How can one know at what time all the soft parts are destroyed? 2. What is really meant by soft parts? 3. Cannot some uncalcified substances stand as much chemical action and time as some calcified ones?

I have found that when I treated my sections with caustic soda until I thought that all the soft parts were destroyed, that the whole section melted down before the hydrochloric acid like ice in warm water, and as far as putrefaction is concerned, that is a little doubtful manœuvre, for in decaying teeth, where we are sure that putrefaction is really at work, we see that the whole of the dentine sheaths and all is destroyed. The very existence of a tooth proves that putrefaction has not been going on very intensively. If one exposes, for example, the pulp and pericementum to to caustic soda, and boiling at that, or too strong muriatic acid he will find that these "soft" tissues although soft in a certain sense have properties which make them persistent.

The second argument of Koelliker to prove his statement:

2. "The elements isolated by Neumann and myself can, as I have said from the beginning, plainly be distinguished as tubules.

I have no doubt at all that these elements are tubules, but I cannot see that their calcification is in any way proved by the arguments so far.

3. Upon the examination of dentine which is undergoing formation it is found that every forming cell (odontoblast) sends a soft fibril into the interior of the dental tubule (Lent, I. Neumann) and there can (Neumann) be shown with the aid of muriatic acid besides these fibres also the dentinal sheaths.

Here I would again like to ask, why Koelliker quotes Lent, Neumann and himself, in proving the existence of the fibril as a process of the odontoblast, and Neumann only in proving the existence of the sheath aside of or with the fibre?

Further this argument is nothing further than a repetition of the proposition to be first proven, and every one has of course a right to disbelieve this statement, until the exact method is given how such facts can be obtained. I have made a section through the root of a developing tooth so very thin that there was to be seen but one layer of tubes as it were, and in front of a small number of canals the odontoblasts were still attached, while in the greater portion they were detached. This section I exposed to the action of strong muriatic acid; after this had operated long enough to dissolve all the homogeneous matrix, I found as many fibres apparently as there were canals before, and where there had been an odontoblast this was connected with a fibre or tube. Of course where there had been no odontoblast attached, there the fibre or tube ended where the dentine had ended before. Now where are the sheaths of Neumann, together with the fibril of Tomes? The process of the odontoblasts are either the one or the other, or are we to call those where the odontoblast is detached the sheaths of Neumann, and where it is not detached the fibre of Tomes, so that all the investigators may have the honor of some discovery.

Of course with carmine one can prove that within the tubule or within the fibre, or in the interior of the fibre there is another kind of substance, and if to that, without the covering the term soft fibril will be given, I will not object, although it seems an unfelicitous term. But terms I intend not to fight, but to mix up several things and to create two things out of one, that mode of reasoning I cannot agree to.

4. "The same cell processes can also be seen in fully developed teeth proceeding from the cells on the surface of

the pulp and entering the dentinal canals, and in longitudinal and cross-sections of decalcified dentine the soft fibres can be recognized in situ."

As far as this evidence is concerned it is not at all convincing to me, for decalcification will disturb the structure enough to make observations upon the contents of the dentinal canals a little doubtful, as far as seeing a soft fibril in longitudinal sections, I fail to see how one can see the softness, and how one can fail to see something like a fibre; and as far as cross-sections are concerned, I suppose in fresh teeth of course there is within the tubule, or sheath, or fibre the material which is stained with carmine, and which is pressed out from the fibril according to Tomes in round drops, and a cross-section will of course not allow an empty tube to appear. But I admit the tube, and I admit its contents, but only cannot see how the sheath of Neumann and the fibril of Tomes can be shown or seen side by side.

5. "On picking to pieces sections of decalcified dentine, fibrils can frequently be seen protruding along the edges, (Tomes) but it is to be taken into consideration that also the dental sheaths can be seen protruding in this way."

Here Koelliker admits himself the possibility of taking a tubule for a fibre, and *vice versa*, and it is not necessary to say any more.

Foey and Waldeyer have about the same view on dentine as Tomes and Koelliker, and the same arguments hold good against them as those against Tomes and Koelliker, but for completeness-sake we will quote Waldeyer also. He says (Strickers' Manual,) page—— "The dentinal fibres constitute the soft parts of dentine. They do not lie in direct contact with the hard matrix, but are invested by sheaths, the dentinal sheaths of E. Neumann which are intimately connected with the matrix. After the fibres have been removed by maceration or by incineration of the tooth the dentinal sheaths remain, and even after destruction of the matrix by boiling muriatic acid or in caustic alkalies, they constitute the only perfectly indestructible residue of the tooth."

Now this is really remarkable, and I must say that the fire used in Europe for "incineration" must be not as hot as fire is here, or the acid and alkalies not so strong as these chemicals are on this side of the Atlantic, or their sheaths of Neumann must be something of the nature of platinum or diamond. It seems indeed these sheaths are quite indestructible in the minds of the investigators there.

"The fibres easily stain with carmine. They possess a remarkable degree of etensibility, so that especially in young teeth the dentinal cells may be separated to a considerable distance from the dentine, without rupture of the processes which then appear like harpstrings stretched over the interval. Salter, in recently describing the fibres as tubules, (because when dry they appear to contain air vesicles and exhibit a dark central point on a section) had probably the dentinal sheaths under observation. The fibres are really completely solid and homogeneous."

We see here the same arguments and even Salter's writing did not seem to have made it possible for the writer to consider if not his dentinal fibre and sheath were the same thing. How a fibre can be completely solid and homogeneous, and stretched like harpstrings, (Waldeyer) and on rupturing let a thick fluid exude (Tomes) and be stained with carmine—all these properties united make really a remarkable object.

Beale's view on the structure of dentine we find in his lectures translated by Carus, Liepzig, Engelmann, page—— "There are few anatomical questions which have called forth a more lively controversy than the structure and formation of dentine; the latest author on this subject, Lent, describes the dentinal canals as consisting of the direct process of the odontoblast. "Die grundsubstanz des zahnbeines entsteht nicht ous dam Elfenbein zellen, sondern ist entweder eine Aussheidung dieser Zellen, oder dar Zahnpulpa ahnlich einer Interzellular substanz." (The basis substance of dentine does not originate from the ivory cells, but is either an execretion of these cells or of the pulp of the tooth, similar to an intercellular substance.) Tomes now has shown that the dentinal canals are tenated by a soft formation which can be seen in the form of solid processes protruding from the broken off ends of the dentinal canals [Koelliker says that the same appearance is produced by Neumann's sheaths.] The correctness of these observations has, however, been doubted by several observers. I have been able to verify the assertions of Tomes as regards the filling up of the dentinal canal with a soft formation and place before you a preparation in which this substance is colored red with carmine and can very plainly be seen. The tooth canals of a living tooth are never empty, they are no tubes at all, nor channels for the transmission of nutrient substances held in solution by fluids, but they contain a soft solid formation the central portion of which is in a condition of active vitality."

We do not doubt of course that the contents of the dentinal tubes can be stained by carmine, but must we on that account admit, that that which Tomes shows by muriatic acid, fracturing and stretching, be the same thing as that which Beale shows by staining? must we admit that because there is germinal matter in the canals there are no tubes there? That would be quite peculiar logic. Of course Beale shows with his method the inner portion of the contents of the canals, which is bioplasm. Tomes shows with his method the outer portion or the dentinal tube, which is certainly not the soft semi-fluid germinal matter, and although in a living tooth Tomes' and Koelliker's fibril contain the bioplasm of Beale, their arguments do not point out the same.

In Todd, Beale & Bowman's Physiology, page 353, Beale, when speaking of the structure of the bone gives his views more implicitly on some points. "The innermost layer of tissues constituting the wall of the lacunæ and of its canaliculi differs in resisting properly from that which is external, not that this tissue is developed separately from the germinal mass of the bone texture. Its greater hardness is probably due to its very slow formation as in the case of the so-called wall of the dentinal tube, which affords another instance of the same sort of artificial distinction of texture, and which has led to a similar view concerning its formation as a texture distinct from the so-called 'intertubular tissue.'"

Why Beale calls it an artificial distinction if attention is called to the difference in chemical composition between the homogeneous intertubular mass and the tubules themselves, I cannot understand. If nature uses something of the nature of leather, and something of the nature of glue in the contraction of her apparatuses, why have we not a right to recognize both? If Beale makes distinctions by the aid of carmine between formed and germinal matter, why are we forbidden to analyze the formed matter still further? And why is not the distinction which muriatic acid makes, of some value just as as well as that which carmine makes?

I suppose Beale opposes the special tubule because it tastes like the "cell wall," and because it opposes his doctrine that the portion of formed matter nearest to the bioplasm is always the latest formed. But this does by no means follow from the theory of bioplasm, *i. e.* that bioplasm always makes or precedes formed matter. Theories have to be made after facts, and not facts ignored on account of theory.

If it now be asked, how came this variety of theories concerning the nature of dentine I think it may be said, the reason is that there are only a limited number of facts, or observations taken in consideration when the theory is made and the causes for that are that the general theories of some will not allow a certain number of facts to become prominent, and again that by others, other facts are assumed which need proof and which are then in the way when they appear in reality.

For example, Beale dwells especially upon the distinction between formed matter and germinal matter, and therefore lays great stress on the facts revealed by carmine, while he ignores the special texture of the tubule because he is fighting the cell doctrine, and because the tubule would agree with a cell membrane. Others again neglect staining, and rely chiefly on the facts brought out by muriatic acid, or think that all soft tissues are destroyed and then imagine that they have destroyed all the soft uncalcified parts, and without giving proofs assume the presence of tubes and then when it comes in their way in different form from what they expected, they think it is something else.

I think the view here given in this paper on the structure will be agreeable to all the facts that have been brought out, and not only that, but in forming the conclusion almost every fact was used. There was neglected neither the staining nor muriatic acid, nor stretching the tubules or fibres, nor the dead tooth nor the living and growing tooth, neither longitudinal nor cross-sections. This view of structure of dentine it will be seen has its support further in the structure of bone, tendons, cornea, whartons, jelly and others. For here we have also the yellow elastic substance either in membranes or in fibres, or threads, together with a homogeneous substance between them which differs also in the different tissues being like glue, for example, in tendon and like mucus in the fibrous tissue of umbilical cord. And as to the direct production of the yellow elastic we have an unmistakeable proof for that in the development of the ligamentum nucae where their is no other texture formed but the yellow elastic fibre and where we can see that these are a direct product of the germinal matter which we find connected with them.—*Dental Register.*

ARTICLE III.

Should Five Years' Practice in Dentistry, Inclusive of Pupilage, Continue to be Regarded as Equivalent to One Course of Lectures in Dental Colleges?

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Read before the Pennsylvania State Dental Society, at the Ninth Annual Meeting, held July, 1877.

The chairman of the Executive Committee wrote to me two months ago to prepare an essay for this meeting of the Society. I responded that it would not be convenient for me to do so. In looking, however, over the order of exercises, which has just come to hand (a few days before the meeting,) I observe that in the list of essays to be presented "Dental Education" is not named. Under these circumstances, with no intention of inflicting upon the members a lengthy and elaborate essay on that important theme, I have thought there might be some propriety in submitting a few suggestions, hastily written, under the query that heads this communication. Brief as the article is, if it should provoke discussion, awaken the minds of the profession to the impropriety of continuing to regard "five years' practice in dentistry, inclusive of pupilage, as equivalent to one course of lectures," and lead to its abandonment on the part of the dental colleges, my object will have been attained.

In the organization of the National, State and local dental societies, dental education was one of the primary and important objects in view. Recognized, indeed as the corner-stone of the foundation, on which an enduring superstructure could be erected, that would command the respect of those engaged in the liberal professions, the founders of these societies advocated the thorough education of those proposing to enter upon the study of dentistry. How that could be best accomplished, whether in departments connected with medical colleges, or in dental colleges, was then, and still continues to be, a prolific theme of discussion. With no intention of entering upon the consideration of these differences of opinion, it is an undeniable fact that the dental colleges have been the active agents in effecting the wonderful changes that have taken place in the profession, and in the estimate of its practitioners by the community within the past fifty years. From what was formerly in the hands of a few men—little more than a mere mechanical occupation—it has been elevated to the rank of a liberal profession; and the dentist, in place of being regarded as an object of fear and dread, whose delight it was to wrench from the jaw an aching tooth in the most unfeeling manner, is now looked upon with respect and gratitude as an educated gentleman, whose mission is to relieve suffering humanity of the most painful of all afflictions, arrest the progress and restore the ravages made by decay in the natural organs; and when these conservative efforts prove unavailing, by the introduction of properly-constructed artificial substitutes to give to the features their natural expression.

It may be said, and truly, that a large proportion of the profession have never been inside of dental colleges, and that the dental societies and magazines have been the most powerful levers in accomplishing this great work. With no disposition to undervalue these agencies—on the contrary, recognizing to the fullest extent the power of the press, and the stimulating and beneficial influence of associated effort—a careful examination will reveal the fact that the organization of the National, State and local societies, in nearly every instance, has been the work of the faculties and graduates of dental colleges, and that the editors of, and most frequent contributors to the dental journals, have been Professors in the dental colleges, who have hereby reached a larger circle of students than could have come within the sound of their voices, and thus have made their influence felt, not only in every section of this country, but in addition, in every quarter of the globe where dentistry is practiced.

Several years ago I directed attention to the fact that, "a little more than a quarter of a century ago (thirty-eight years) a successful effort was made to establish a college for the express purpose of teaching the science and art of dentistry, in a manner calculated to elevate it to the rank of a liberal profession. As year after year rolled by, efforts were made, with varying success, to found institutions of similar character in different sections of the country. Some of these, after an ephemeral and inglorious career, ceased to exist; but the greater number have increased in strength and usefulness. Institutions of learning, as a rule, like individuals and nations, are compelled to enter upon their career with limited means, and whatever may be the aspirations and desires of their founders—with the fullest possible recognition of all that is demanded for the successful accomplishment of the aims and objects in view—stern necessity compels them to accommodate themselves to circumstances and make the most of their surroundings, with the determination, as time and increase of resources afford the means and power, to do that which was impossible to effect in the commencement of the undertaking. As the seed laid in the graund, under favoring influences, germinates and produces a thousand fold, so with increase of years, strength and resources, evidences of growth should be manifested in collegiate institutions, by enlarging the curriculum of instruction, increasing the means of illustration, and in every direction affording the fullest opportunity possible for the impartation and acquisition of knowledge.

"The trials and difficulties with which the faculty of each institution has had to contend in gaining the confidence and support of the profession, cannot be appreciated by those who have not participated in the struggle from the beginning; nor can they conceive the more than missionary zeal that is demanded in delivering regular and systematic courses of lectures to classes so small that the prospect of ultimate success appears impossible to any other than enthusiasts. A distinguished writer has said, 'It is pleasing to contemplate a manufacture rising gradually from its first mean state by the successive labor of innumerable minds; to consider the first hollow trunk of an oak, in which, perhaps the shepherd could scarce venture to cross a brook, swelled with a shower, enlarged at last into a ship of war, attacking fortresses, terrifying nations, setting rooms and billows at defiance, and visiting the remotest parts of the globe. And it might contribute to dispose us to a kinder regard for the labors of one another, if we were to consider from what unpromising beginnings the most useful productions of art have probably arisen. Who, when he saw the first sands of ashes, by a casual intensity of heat, melted into a metalline form, rugged with excrescences and clouded with impurities would have imagined that in this shapeless lump lay concealed so many conveniences of life as would in time constitute a great part of the happiness of the world? Yet by some such fortuitous liquefaction was mankind taught to procure a body at once in a high degree solid and transparent, which might admit the light of the sun and exclude the violence of the wind; which might extend the sight of the philosopher to new ranges of existence, and charm him at one time with the unbounded extent of the material creation, and at another with the endless subordination of animal life, and what is yet of more importance, to supply the decays of nature and succor old age with subsidiary sight. Thus was the first artificer in glass employed, though, without his own knowledge and expectation, he was facilitating and prolonging the enjoyment of light, enlarging the avenues of science, and conferring the highest and most lasting pleasures; he was enabling the student to contemplate nature, and the beauty to behold herself.'

"The origin and establishment of dental colleges have been so recent that ample opportunities have been afforded, not only to the profession, but the public at large, to observe their gradual development by the successive labors of a few active, energetic and indefatigable minds; and whatever may have been the doubts in the past, the question of the success of the movement is no longer an uncertain one."

These efforts have been subjected to constant criticism on the part of the profession, particularly at the meetings of the Associations. Some of these criticisms have been just, while others have been not only unjust, but ungenerous, and even willful perversion of facts. It is not only my intention to dwell on all the points that might be considered, but to direct attention to the fact that leading members of the profession have over and again urged, that the dental colleges should require of all students of dentistry attendance upon at least two full winter courses of lectures. And I would now ask the representatives of the profession in this and other State Dental Societies, and in the Ameican Dental Association, whether you are in earnest in this matter, and are willing to prove it by acts as well as words? You have the power. It is but for you to suggest, and the dental colleges would promptly act. Your request would be regarded in the light of a command.

When dental colleges were first established, the custom of regarding "five years' practice in dentistry, inclusive of pupilage, as equivalent to one course of lectures" was inaugurated, and found its justification in the fact that there were those who had been engaged in practice years before the foundation of such institutions, whose knowledge and skill was quite equal, if not superior, in some instances, to those of the professors, and therefore warranted the exception in their favor. Year after year this exception has been continued, and many excellent men, *of studious habits*, who have graduated under this clause, are an honor to the profession. There are still some estimable practitioners entitled to its provisions who have failed to take advantage of it, and in whose cases exceptions might be made in favor of fifteen or twenty years' reputable practice. But to continue to hold out the inducement that "five years' practice in dentistry, inclusive of pupilage, will be regarded as equivalent to one course of lectures," can be defended on no other ground than that of expediency, in securing a certain class of students, while at the same time, it is a standing advertisement in the college announcements, encouraging and indeed offering a premium to young men to enter the offices of practitioners, who are willing to take them, with the understanding that after remaining a few months, and in many instances but a few weeks, they can engage in practice on their own account, and with such inadequate preparation, after doing all the injury they can to the community and the profession, subsequently taking advantage of the "five years'" clause in the college announcement, graduate in one winter course of lectures. If this clause was rescinded by all the colleges, these men would be forced to attend at least two full winter courses, and thus undergo a training that would fit them to engage in practice with some credit to themselves and benefit to the community in which they may settle. As I have elsewhere asked, "What are the practitioners of dentistry doing individually with regard to the education of the profession? Is it not true that a man can enter the majority of dental offices, and after a short period—a few weeks or months at best, during which he has had few, if any opportunities beyond those afforded in the laboratory of learning anything about dentistry—engage at once in practice, with a certificate from his preceptor endorsing his competency? Are those who so freely criticise dental colleges doing their part as private preceptors? Do they inquire into the mental, moral and physical qualities of those whom they receive as private students; supply them with the latest and best text-book; direct their course of reading, and subject them to stated examinations, to ascertain what progress they may have formed? A few members of the profession do this, but they are exceedingly limited in number, and the yearly additions to the profession are mainly through private preceptors, who fail to do their duty by those who come under them as students; only a small proportion of the latter attend college and graduate. The alumni of the dental colleges have done much toward the advancement of the profession during the past few years, and they embrace among their number some of the most cultivated minds and skillful practitioners in our ranks. For years I have advocated the enactment of State laws which would make it obligatory upon students of dentistry that they should undergo two years of private preceptorship, attend two full courses of lectures, and graduate from a respectable dental college, before entering upon practice.

As one illustration out of many which might be cited of the manner in which private preceptors, so-called, at home and abroad, fail to discharge their duty to students, permit me to cite the following case. This spring a gentleman wrote to me in relation to a young man who had been engaged in dentistry for five years—four years in Europe, and one in America—and desired to graduate at the Philadelphia Dental College by attending one course of lectures. To this I replied, as in a number of similar applications, that unless the young man had attended a winter course of lectures in some other dental or medical college, it would be necessary for him to attend two full winter courses of lectures to entitle him to present himself as a candidate for graduation, as the faculty had rescinded the clause that "five years' practice in dentistry, inclusive of pupilage, will be regarded as equivalent to one course of lectures." In reply to this, a letter was received stating that this young man would start for Philadelphia immediately. He arrived in a few days and presented the following letter:

"Dear Sir: I have the honor to introduce to you hereby, Mr. ————, who is to enter your college, and whom I take the liberty of recommending to your special care."

In the interview with the young man, he gave me to understand that it was absolutely necessary for him to graduate at the expiration of the next winter course, as he had to return to his native country at that time to perform military duty. On asking what he had done during the past five years, he said his time had been passed in the laboratories of various dentists in Germany whom he named, and with one in this country who had given him some opportunities to operate. He had never studied anatomy, physiology or chemistry. Putting a few leading questions to him, which a young school boy would have answered, and he could not, I then endeavored to impress upon his mind the importance and extent of these studies; how utterly hopeless would be the task of undertaking to master a knowledge of them in the brief time he had named; and if he were ever so skillful as an operator and as a mechanical dentist—a fact yet to be proved by actual demonstration—I did not see how any college could regard *his* five years in dentistry as equivalent to one course of lectures, as it would be a very free interpretation of the clause to accept him as coming within its provisions, as he had never been *a student* or in actual practice on his own account, and merely occupied the position of a workman for others. Five years' work at the jewelers' bench, in a machine shop, or with a jack plane of the carpenter, might with equal propriety be regarded as an equivalent. That over again, in former years, I had declined to receive persons like himself as coming within the clause, and had induced them to attend two full winter courses of lectures; and that we could not receive him as eligible to graduate on one course, as we required attendance upon two full winter courses, which he was advised to take advantage of. He replied that he could not do so, and would have to go where he could make such arrangements as he had named. The young man spoke very good English. I name this, as it might be inferred that his inability to answer the questions was due to a want of familiarity with our language. The questions were plain and simple ones, with the view of ascertaining whether he had any knowledge of the subjects named. Some idea of their nature may be gained by one of them, viz, How many cavities are there in the human heart? Answer: Two. The young man was by no means deficient in intelligence. On the contrary he impressed me that by taking sufficient time to properly study the sciences named, he would have no difficulty in mastering them. The interview was a pleasant and friendly one throughout, and the young gentleman subsequently called and thanked me for the courtesy and attention which he had received.

At a period when many young men who have enjoyed every advantage in education not only attend two full winter courses of lectures, but in addition take two spring and fall courses, and work daily in the dispensary and laboratory of the Dental College for two years, with the view of properly fitting themselves for the practice of dentistry, it is an act of injustice to them, and one which they may very properly complain of, when discrimination is made in favor of men who have had none of their advantages, and yet are permitted to graduate on one term.

In conclusion, every one must admit that the interests of the profession, the community, the colleges, and last, though not least, the students, alike demand the rescinding of the clause that "certified evidence of having had five years' practice in dentistry, inclusive of pupilage, will be regarded as eqivalent to one course of lectures," and that in place thereof attendance on two full winter courses of lectures should be required of candidates for graduation by every respectable Dental College.

That the motives in writing this communication may be mis represented by interested parties, is naturally to be expected; but the principles on which it is based, cannot be controverted, or overturned.

ARTICLE IV.

The Limits of the Optical Capacity of the Microscope.

BY LESTER CURTIS, M. D., CHICAGO.

Two papers, one written by Professor Abbe, of Jena, and the other by the well known Professor Helmholtz, on the limits, beyond which, from the nature of light, it is impossible to carry the magnifying power of the microscope, with any profit, are at present attracting considerable attention among those interested in the use of the instrument. It has been suggested to me that a condensed statement of the results arrived at by these investigators might be of interest to those readers of the *Medical Journal and Examiner* who might not have access to the original papers.

The first difficulty that stands in the way of a very great amplification of an object, is the difficulty of obtaining sufficient illumination to render it clearly visible. The opening through which the object is viewed in a microscope diminishes just in proportion to the magnifying power. The size of this apparent aperture has nothing to do with the size of any of the glasses of the microscope, and only varies with the changes in the magnifying power of the instrument; it makes no difference in what way this magnifying power is obtained, whether by the use of higher power objectives, or higher eye-pieces, or by lengthening the tube of the instrument. The only circumstance that modifies the size of this orifice is what is called the angular aperture of the objective, an objective of a small angle having a smaller field than an objective of a larger angle. The size of this orifice can be seen by arranging the microscope as for an ordinary observation, and then removing the eye a short distance from the eye-piece and looking down it. One who has never tried it before will be surprised at the exceeding minuteness of the orifice through which the object seems to be seen. As long as this orifice is no smaller than the pupil of the eye, the image seen in the microscope suffers no loss of brightness by its increased magnification; when however, the orifice through which the object is viewed becomes smaller than the pupil, the image seen loses in brightness.

Supposing the diameter of the pupil to be about 1-12 of an inch, and the objective to have an aperture of 180 degrees, the amplification, to be equal to the pupil, would be 166.7.

The brightness of the image as the magnifying power increases, diminishes in the following ratio:

For an amplification of	166.7	brightness	1.
“ “ “ “	333.3,	“	1-4
“ “ “ “	500.0,	“	1-9.
“ “ “ “	666.7,	“	1-16.

It will be easily seen that for the very great magnifying powers sometimes used there must be a great diminution of the brightness of the image, notwithstanding the appliances that are used to increase the light; and finally there must be a limit beyond which the amplification cannot go, from the fact that the image will be so dim as to prevent its structure being made out.

Along with this decrease in the size of the beam of light admitted to the eye is another difficulty, and that is the production of shadows within the eye itself. It is well known that if a narrow beam of bright light is admitted to the eye in a direction somewhat oblique to its axis, that the shadows of the retinal vessels can be seen. Now, in the case of an observer who is examining an object highly magnified, a narrow beam of light passes into the eye, and the shadows of the retinal vessels thus produced, and appearing as a vail over the object, must, as a matter of course, impair the clearness with which it is seen.

There is still another difficulty connected with this same diminution of the orifice through which a highly magnified object is seen, and that is diffraction. We are all aware that if we look across the edge of a screen at any brightly illuminated object there appears a narrow shadowy fringe along the edge of the screen. This fringe is called diffraction, and is always found where light passes by the border of any object. If we place two edges so closely together that these diffraction fringes overlap, and look at any bright object through the opening, we shall observe a great impairment in the clearness with which it is seen. A convenient experiment is to make a small hole in a card, which is thick enough to be quite opaque; or to scratch a fine line on a piece of glass which has been covered with some black varnish, or covered with turpentine and smoked; and then to look through the hole at a printed page, upon which a strong light has been thrown; it will be seen that the letters which were to be seen with the greatest ease before can now be scarcely read at all. The smallest aperture through which an object can be seen, without an overlapping of these diffraction fringes, and a consequent impairment of the image, is about one-twelth of an inch. As we diminish the orifice, the details of the object become more indistinct. Now this diffraction occurs around the edge of the orifice, through which we look at images in a microscope, in exactly the same manner that it does around the edges of the orifice in the card, through which we looked at the letters of our book, and when we come to the higher magnifying powers the orifice becomes exceedingly small. Supposing that the angular aperture of the glass is 180 degrees, the orifice through which we look when the object is magnified 1,000 diameters is 1-50th of an inch, for 5,000 diameters it is 1-250th of an inch. The impairment in the clearness of an image, seen through such holes, can easily be learned by trying the experiment of looking at the flame of a lamp through a hole of that size.

Another and more serious difficulty yet remains to be considered, and that is the modification which the light undergoes in passing through the object before it reaches the microscope. If the details of an object examined with the microscope are not less than 1-750th of an inch apart, the image of the object is seen in exactly the same way in a microscope that one would be in a telescope, and the image seen can be relied upon as being an accurate representation of the object; but, if these structures approach closer than this distance, a certain part of the light suffers a change by diffraction, just as the light passing through the small hole suffers diffraction. When the details of the structure approach to within the 1-2500 of an inch of each other, all the light passing through the object becomes diffracted. In this case its direction is changed, and in place of passing directly through the object, the light is spread out into a fan shape, as it would be by a series of minute prisms.

If now we focus the microscope upon such an object as, for instance, a series of fine lines ruled on glass, and then take out the eye-piece and look down the tube of the instrument, we shall see in the center of the object-glass an image of the object. If the lines are no finer than 1-750 of an inch apart, we shall see nothing else than a true image of the object, but as the lines grow finer we shall begin to see colored spectral images on each side of the true image, one color after another appearing as the lines grow finer, and when the lines reach a fineness of 1-2500 of an inch we shall have a complete series spectral images extending to the right and left of the true image, beginning with the violet nearest to the true image and extending to the red furtherest away. The distance of these spectral images from each other and from the true image varies inversely, as the fineness of the lines; if the lines are not very fine the colored spectral images will be closer together, and the finer the lines the further apart will be the spectral images. If now we take out the eye-piece and put a diaphragm down the tube of the microscope, just behind the object-glass, which cuts off a portion of these spectral images, and replacing the eye piece examine the object, we shall begin to lose in the clearness of the appearance of the image. If we put in a series of diaphragms which cut off one after another of the spectral images, some of the details disappear with each one of the spectral images which is cut off, and when the diaphragm is small enough to cut off all the spectral images, all the details disappear and the structure appears a blank. It is necessary, therefore, in order to make out any of the details of an object that at least one spectral image shall enter the object-glass with the true image, and, if the object-glass has not angular aperture enough to take in these two images, no structure can be seen, however great the magnifying power that may be employed. Value of angular aperture is not therefore, that it allows great obliquity of light to be used, which causes light and shadow, and so shows surface markings, but because it enables the objective to take in these spectral images, which are caused by the most intimate structure of the object. Another conclusion from this is, that when the details of an object are so fine as to cause a dispersion too great to be taken in by any object-glass, the limit of possible vision is reached. This limit for an objective of 180 degrees of angular aperture, used with light whose direction is very oblique to the axis of the instrument, is equal to one-half the length of a wave of light. With the use of the ordinary mixed white daylight, this limit would be 1-92000 of an inch. By the use of blue light alone, this distance might be reduced to 1-122000 of an inch, which is the size of the smallest object that can, under any circumstances, be seen by a microscope theoretically perfect.

There are some other points that may be brought out by the use of these diaphragms. By cutting off some of the spectral images, intermediate between the true image and the outer spectral images, the lines can be apparently doubled and quadrupled in number. In objects with lines crossing each other at various inclinations, many different appearances, all apparently clearly defined, can be produced by cutting off some of the spectral images by diaphragms of various kinds.

According to these investigators therefore, we have already reached the limit of the magnifying power of the microscope; no microscope can ever be made which will give a useful magnifying power greater than some now in use; indeed Professor Abbe thinks that a magnifying power of seven or eight hundred diameters is all that can ever be used with profit.

Nobert's lines, ruled upon glass at a distance of 1-112000 of an inch apart, have been seen, and that is as near the theoretical limit as we can ever expect to attain.

Finally, according to these investigations, we must revise the opinions we have had in regard to the details of the structure of many minute microscopic objects, and confess that there is no certainty that the image of them which we see in the microscope represents their structure truthfully.

It may be well to mention, however, that in one or two well authenticated instances, objects appear to have been seen finer than the limits considered possible by this theory.—*Chicago Med. Jour. and Examiner.*

EDITORIAL, ETC.

The Decline of Mechanical Dentistry.—Its Appropriateness.—We publish elsewhere an abstract from an article by Prof. Barker, on the above subject. The points he makes are forcibly put, and seem at least partly true. Here however as elsewhere the doctors radically differ. People will continue to lose their teeth, possibly faster in the future than in the past, owing to causes entirely beyond the control of the dentists. Until we are so regenerated physically as to have teeth of better construction, more perfectly calcified, and until our patients can be educated to take better care of the work we do for them,—and even with the best they can do the inherent difficulties of perfectly cleansing teeth are almost insurmountable,—until much that now seems inevitable can be overcome, we may not hope or expect but that artificial dentistry must hold a prominent place in the profession. It is useless to sigh for the day when all natural teeth will be preserved. So long as, to use the words of a writer, "children are begotten in debility and born in feebleness, so long as nervous and overworked fathers, and anemic and immature mothers, bring illy nourished and scrofulous children into the world, to perish prematurely or drag out a life of feebleness and enervation," so long may we expect to furnish such patients with artificial substitutes for their perishing natural organs.

We have not felt however, like joining in the cry as to the appropriateness of the decline of mechanical dentistry. That it has declined, is true enough, but this degradation is due not so much to anything inherent in this art of substitution, as to its importance being overlooked in the anxiety to perform difficult and doubtful operations. We have no disposition to underrate the beautiful fillings which are seen very often now, but it must be apparent to every reflective mind that often these operations, splendid works of art intrinsically considered, are as much out of harmony with nature as is possible. We are satisfied that the day will come when the glitter of contour fillings will be looked upon as a relic of the days when the æsthetic in dentistry was in its crudity, raw and unrefined. When this is realized, and when the profession is sufficiently advanced to feel that the glare and glitter of a flashy gold tooth is not in good taste, the inappropriateness of the "decline" of dental mechanism will be better seen and understood.

We should feel mortified at the failure of our operations only, it seems to us, as we realize that these failures are due to our imperfect work. We should not lose sight of the fact that many teeth are, from causes above mentioned, utterly unsalvable, and that their total loss is only a question of time; and while making no excuses for imperfect work we know that many of the "best men" sigh over the wreck of their best efforts at conservation.

In no department of surgery does the operator so confidently promise his patient good and lasting results as in dentistry, and it is to over-confidence in the durability of what we do that the mischief lies. If dentists would do less of this assurance of immunity from decay, it would be wiser; for reflection and observation should make us sadly conscious that we cannot do so consistently, and the failure in such case is made by the patient to be the fault of the operator. There is no disposition here to underrate the inestimable value of good fillings, only to press the truth that our work is reparative only, and as snch should not be promised for too certainly. The probability is almost a certainty that in the future the necessity for artificial teeth will increase instead of diminish, and that the few earnest men in that department will have accessions to their ranks instead of desertions. It remains for the profession to correctly teach the public who require teeth of replacement what true art is, and endeavor to overcome the utter perversion of taste, which allows and even calls for the present barbarous glitter of artificial teeth truly called "false." H.

Editor American Journal of Dental Science.

DEAR SIR.—*A Correction.*—I see a letter published in your valuable journal, over the signature of H. that does some injustice to the Southern Dental Association.

He says "for the last two or three years, no quorum has been in attendance, and that the annual meeting that was to have been held at Montgomery, Ala., in May last, was adjourned at the instance of the executive committee."

Why H. should have made the above statement is marvelous indeed. Can it be that he has been made the dupe of some one, or did he say it on his own responsibility without knowing anything about the matter? The latter is hard to believe. The last three annual meetings have been small, 'tis true, as I can testify, having been present at all of them, but we had a quorum at each and more, and the usual proceedings were gone through with, and with much apparent interest to all present. The meeting at Montgomery, was a very interesting one as all present will say. The first day was rather dull, owing to the heavy rain fall the night before, preventing some getting in on time, but to say "no quorum" and "adjourned by the executive committee" is wonderful. A huge committee to elect officers, and change the time of meeting to July, 1878, and fix Atlanta, Ga. as the place, and still more, call a special meeting at Deer Park. H. must think we have very efficient executive committees down this way to do all that.

His reasoning as to the "falling off of membership," is also incorrect. It is not due to the "growing poverty of the South," for this is not true; the South is getting better off every year, and as a people, are better off to-day than they have been since the war. The true cause in my judgment is, that when this organization failed to grind satisfactorily for some who were rather aspiring in their composition, said aspirants had no further use for the organization, and it has been abandoned by them to drag out a feeble existence, as a child from parents whose blood is not pure. Be this true or not, I must say I hail with delight the National Convention now proposed by so many prominent men of the profession, of purer blood and nobler aspirations, who can esteem others equal to, if no better than themselves. L.

[The information as to the status of the Southern Dental Association was furnished our correspondent, so he informs us, by parties deemed reliable, and was of such a character as any journalist would feel justified in accepting as conclusive. We are pleased to hear from "L," that the "Southern," which has our heartiest sympathies and good wishes, is not dead or dying. As to the falling off in attendance upon its annual meetings, we cannot judge, not knowing, but it may be that both our esteemed correspondents are right in part. We hope that the aspirants for fame will not allow their desires in that direction to overcome their love for the advancement of the profession.—Ed.]

This Number is a good one, is it not? We feel that the several articles, original and selected, are quite up to the average of similar productions in other professions, and are no mean evidence of the industry and talent, as well as the cultivation of the Dental Profession.

The article (reprinted from the *Dental Register*,) on the "Action of the Nervous System," by J. J. Caldwell, of this city, is worthy of careful perusal. Dr. C. is a gentleman eminently well qualified to write on this subject, having made it a special study for years, and is withal a man of fine acquirements added to his natural gifts, with a good many years hospital practice, and a writer well known to the medical public. Other articles are promised from Dr. Caldwell, and we hope to see the pages of the Journal well crowded.

Harris' Medical and Dental Dictionary.—A new and carefully revised edition of the above work is in press, the work being under the supervision of Prof. F. J. S. Gorgas. The constantly changing and improving methods of dentistry, and the rapid onward march of dental and all other science, makes this revision a necessity. Text books can never be quite up with the times—we must look to the journals for this—but it is important that they should be as close up as possible, and in this day of rapid movements it does not take long to be behindhand. The new edition will give us all that is standard, the obsolete eliminated and much that is new and valuable introduced. A more extended notice will be made when the work appears.

H.

NOTES FROM PRACTICE.

Practical Hints in Dental Mechanism.—Your flasks for Vulcanite give you trouble. Bolts break, or threads strip; the hot flask is difficult to handle; the dirt peculiar to this work is specially adherent,—no amount of scrubbing seems to move it;—the pressure on the blocks, cracks or separates them, and in frail cases with poor plaster, the model itself is injured. To avoid these troubles and vexations, get a flask press, the older forms of the celluloid press—a stirrup and screw—is an excellent apparatus for the purpose, and with this and a block of spring rubber—the kind of which car springs, &c. are made—the difficulties are in most part avoided. Place the flask after packing, in the press, and placing the block of rubber, which for this purpose should be one and one-half inches square and half or three-fourths of an inch thick, on the top of the flask, and the center-piece, or disk of iron on the top of this and then turn the screw gently in position. Put it into your boiler of water. The rubber will soon be softened by the heat, when the screw may be turned down, using no more pressure than the finger and thumb—the wood handle of the press ought to be removed—until the rubber under the disk is flattened out considerably. You may now go off and do what else you have to do, your flask is closing gently, surely, automatically. The pressure is so steady and gradual as to force nothing unduly, and all handling of the flask is avoided.

Broaches for Pulp Canals.—For those who prefer or are compelled to make nerve broaches for themselves, nothing is better—perhaps nothing so good—as a piece of *piano wire.* It is of good steel, drawn to a spring temper, and is exceedingly strong and tough. It may be gotten of different sizes and filed down to suit. We have found these excellent for broaches and also as pluggers for filling the roots. They may be held in a broach holder, or mounted in a light wooden handle,—the latter is best, giving lightness and avoiding the changing the other would necessitate. By cutting with a chisel a series of barbs on one side they may be used to rapidly cut out or enlarge the root canals.

A Case in Practice.—In excavating a cavity in a superior bicuspid, accidental exposure of the pulp occurred, with no pain of consequence. The point of exposure was very small.

A drop of gutta-percha dissolved in chloroform was applied, the application being easy on account of the loss of the adjacent tooth. Over this was placed a filling of os-artificiel, when pain instantly set in, and increased in intensity, until in an hour the whole face was in agony, the eye suffused, and no yielding to counter irritants manifested. The filling was removed, but with no abatement of the pain; nor did the application of the traditional remedies in the slightest degree moderate the suffering which was now intolerable. Arsenic was applied, and in five minutes all severe pain was gone, and the patient comparatively comfortable. The patient was an excessively nervous, overworked dyspeptic.

QUERY.—What else ought to have been done, if any thing?

Anæsthetic effects of Cold Water.—A writer in the *Medical and Surgical Reporter* gives it as a fact that the hypodermic injection of a few drops of cold water produces remarkable results in the relief of pain in rheumatism and other acute diseases. A short time ago a statement was currently published, to the effect that a physician had accidentally substituted water for a solution of morphia, with the happiest results in sciatica. This writer, having a case on his hands where the patient, suffering with phthisis, was in the habit of taking hypodermics of morphia regularly for the refief of cough, substituted water on one occasion only, which was not a success. No amount of evasion would convince her that a mistake had not been made, and he was glad at the expiration of half an hour to get rid of his patient's importunities by using the morphia itself. "Ah!" said she, "that feels something like. That other was no better than water."

MONTHLY SUMMARY.

Advertising Dentists.—That all the advertising dentists are not in America, is shown by the card of "P. A. Stevens, England, Chemist and Dentist," who is "sole proprietor and maker of a silvery white gutta percha enamel, for stopping decayed teeth." He is prepared to supply wholesale houses.

Decline of Mechanical Dentistry.—Prof. Barker, in a paper read before the Pennsylvania State Dental Society, takes up the subject of Mechanical Dentistry and considers its "decline inevitable and appropriate." He thinks it is neither pride, at being considered above a mechanician, nor conceit, that is at the bottom of this decline, but a deeper feeling than either of these. "Every dental substitute," says he, "introduced by the intelligent and thoughtful operator, is a source of mortification that the art and science he is practicing has failed, either through the patient's neglect, or the dentist's want of skill, to preserve organs that were designed to last the life-time of the individual." He further thinks the idea of restoring facial expression founded in error, at least so far as complete replacement of the position of the muscles is concerned, and thinks that the cause of this failure, which is notable enough in many cases, lies deeper than the simple removal of the teeth, and consequent absorbtion of the alveoli. He attributes the change due to "modified functional activity," and to organic structural change also, produced by the mutilation of those parts by the removal of the tooth and the absorbtion of their bony sockets. The first of thesecauses—*i e.*—functional activity, he thinks is interfered with, first, by the shock of extraction; second, the increased functional activity of absorbents necessary to carry off the processes, now foreign bodies; third, the more or less entire obstruction and obliteration of the arteries in the parts, and a destruction of the capillary vessels. All these causes acting on the vaso-motor nervous system of these structures he thinks will account for the atrophied condition, imperfect muscular contraction, and want of co-ordination on the part of these muscles." Dentists should "turn to mechanical dentistry with sorrow and shame, as the medical man does to the barber for the wig for his hairless patient, or to the instrument maker for the tin horn for his deaf one. He cannot feel proud of it, for it is to him a symbol of the utter failure of his cherished art."

"All diseases of the teeth," concludes Prof. B., "with the sole exception of the wasting of the alveolar processes, are curable in nearly every instance. We have learned to preserve the pulp, to cure the diseases of the teeth; to make roots that were troublesome, healthy and comfortable; we are making rapid progress in treating successfully atrophy of the alveolar processes; then am I claiming too much when I assert that the washing of hands by the 'best men,' is a good sign, and only precedes the hearty hand-shake over the appropriate and inevitable decline of mechanical dentistry."

Davyum.—A new metal christened by this title has recently been isolated by M. Serge Kern. It belongs to the platinum group.

Diverse and Divers Views.—As an example of the exceedingly diverse views expressed at Dental Associations on subjects in controversy, we make the following abstracts from the debate on a paper read before the American Dental Association, with the title, " Is the Dental Pulp Essential to the Integrity of the Tooth-Structure?"

"The presence of the tooth-pulp is necessary to preserve its (the tooth's) entirety."

" The pulp will reharden teeth softened by constitutional disease."

" The pulp has no connection with the dentine, and does not supply it with nourishment. The tooth is nourished by the pericementum."

"The dentinal fibrils can be drawn out of the dentinal canals."

" The pulp is a formative organ, and when that function is performed the tooth is complete, and needs little support."

" We over-estimate the importance of the pulp. Sometimes instead of being a benefit, it is a nuisance."

" It is the same thing to kill a pulp as to take off a leg, only on a smaller scale."

"I do not want any better practice than to cap freshly exposed pulps. I would rather cap than take the chances of extirpation."

"Oxychloride of Zinc is the most treacherous and deceitful thing one can use, an assassin in the dark. The risk of capping is ten times as great as devitalization."

" When a tooth aches violently, it (the pulp,) should be extirpated."

" When the pulp is destroyed, paralysis and atrophy ensue; in removing it the end is wounded, and some of the worst forms of facial neuralgia sometimes caused. It may even run back to the brain and set up a difficulty there."

"The dentine is supported by the pulp, and when it is removed the tooth will disintegrate."

Eucalyptus as a Local Anæsthetic—Dr. Horton, (Ohio State Dental Society,) speaks of the extract of eucalyptus as producing good results as a pain obtunder in sensitive dentine. A drop on a pledget of cotton is used. He thinks it the best of the local applications.

Strychnia as a Substitute for Quinia.—Mr. Geo. Brown, (*Chemist and Druggist,*) proposes the use of strychnine as a substitute for quinine, during the present high price of the latter. He thinks that in neuralgia it is quite equal to the great anti-periodic.

Malaria.—According to the U. S. census of 1870, malarial fevers are most fatal in 1st. Florida, Louisiana and Texas; 2nd, in Arkansas, Mississippi, Alabama, Georgia, Missouri, Kansas and Nevada: 3rd, in New Mexico, the Carolinas, Virginia, Tennessee, Kentucky, Illinois and Indiana; 4th, in New England, the Middle States, Wisconsin and Minnesota. Contrary to the common notion, there is considerable mortality from this cause in California. Localities subject to the inter-mixture of salt and fresh water are peculiarly prone to malaria. The use of impure drinking water seems to have some effect in promoting malarial disease; it is supposed by some that the presence of ozone and malaria are usually in inverse proportion, though this is denied. Malaria gains access to the system, mainly through the respiratory organs, is found most active about sundown and at night, will not pass over a large body of water, nor climb great heights, is dissipated by sunlight, and in part rendered innocuous by certain vegetable growths. According to some writers, suppurating wounds heal with difficulty in malarial subjects, and it is a formidable obstacle in the way of treating diseased or dead tooth pulps; and renders material modification of the treatment of pneumonias and other diseases necessary.

Secondary Dentine.—Probabilities of After-destruction of Peripheral Cells of Pulp.—Dr. M. S. Howe, in the N. Y. Odontological Society, March meeting, read a paper on *secondary dentine*, in which the ground was taken that "the expectation that a *peripheral plate of dentine* can and will be formed to close an orifice and *protect a pulp*, after the loss of a portion of the organ—i. e.—the pulp, is not well founded. He thinks that if any destruction of the cells upon the periphery of the pulp has occurred, "the conditions, whatever they may be, which induce the deposition of lime in the deeper portions of the pulp, must be in a greater degree morbid, and so uncertain as to give us little cause for cherishing great expectations. With the fact in view that the patient is greater than the tooth, will we not, if our premises are correct, be rendering the best service, in cases of exposure, with loss of a portion of the pulp, (the odontoblasts,) by removing the remainder of the pulp and thoroughly filling the cavity whence it come?"

Animal Magnetism.— Dr. Kelly, (same society,) states that he spent three-quarters of an hour in digging out the root of a tooth, with the blade of a pen knife, his patient being magnetised and feeling no pain whatever.

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ARTICLE I.

Efficacy of Electricity in Dental Surgery—Scirrhus and Epithelial Degeneration of the Tongue and Tissues at its Base.

[MESSRS. EDITORS:—Among the numerous reports tending to sustain my position as to the Efficacy of Electricity in Dental Surgery, I give you the subjoining as one of interest, especially as it comes from DAVID PRINCE, M. D., a physician of large experience and practice.

Yours fraternally,
NEW YORK, Nov. 2nd, 1876. GEO. H. PERINE.]

Scirrhus and Epithelial degeneration of the tongue, and of the tissues at its base, present unusual difficulties to the application of the knife, the scissors, and the ligature.

The difficulty of access, and the abundant vascularity, all points to the desirability of some agent which will sever the parts without loss of blood, and without the necessity of ligatures.

The vessels are in the midst of muscular fibers crossing in various directions on account of which a tenaculum is liable to tear out, and unless a pin is inserted previously to the application of a ligature it is liable to slip off. A deluge of blood in the mouth obscures the parts upon which the knife or scissors are being applied. The cleansing away of blood retards the progress of the operation, so that the surgeon is forced to proceed with uncertainty in regard to the precise place of the deeper incisions. The Galvano-cautery meets these difficulties; there need be no blood lost, though the prick of the tenaculum or vulsellum employed to hold the tongue is apt to occasion the loss of a few drops. It is not that the loss of a small quantity of blood in an operation is any serious evil to a patient if it can be securely checked; it is the great satisfaction to the surgeon in being able to proceed by one step, or by many, with accuracy and with the parts in perfect view that gives this proceeding its attractive features and entitles it to be called beautiful. For great accuracy of detail and perfection of result, it is best to proceed by short steps, or as we should say in the use of the knife by short incisions, time is in this case of very little consequence in comparison with perfection of result. It is convenient to reverse the order of incision by the scalpel and to imitate that of the bistoury, *i. e.*, to cut from within outward. The platinum wire is introduced by a needle threaded by the wire; or better by a thread which serves as a pilot for the wire. Having been introduced and attached to the wire looop-holder the connection with the battery is made, and the wire slowly cuts through, closing vessels as it proceeds. In operating upon a part so vascular as the tongue, it is best to use a wire as large as No. 1 of the French and American scales for bougies, because it coagulates deeper than a small wire, which lacks the necessary radiation of heat to destroy more than a very small thickness of substance. In parts presenting very little vascularity, a small wire can be used with rapid progress, but with the risk of melting at some point. The inconvenience arising from this accident, however, is only that of delay in readjusting the wire. Surgery in its esthetic aspect always loses credit by mishaps producing delay, and on this account it is desirable to work with appliances which do not get out of order in the act of using them. In the removal of the lateral half of the tongue, it is convenient to split the tongue first. To this end a thread is introduced at the point intended to be the posterior extremity of the incision; this thread acts as a pilot for the platinum wire, which when drawn in is attached to the loop-holder, having connection with the battery. At this stage the median line of the tongue is embraced in a loop of wire.

The writer finds it convenient to control the current by pedal, the strength of the current and the consequent degree of heat are determined by the depth to which the plates sink in the fluid. All things being in readiness, the plates are immersed by an assistant, while the operator makes traction upon the wire, being careful not to pull too hard for fear of causing the wire to travel faster than the tissue becomes thoroughly sealed by a burnt crust.

Having made the central incision, a lateral incision made in the same way, divides the anterior pillar including the palato-glossus muscle. A third incision separates the half tongue from the floor of the mouth; this process may require additional incisions to make the separation satisfactory. Having proceeded thus far, the loop can be slipped over the half tongue which is ready to be amputated; this is gradually accomplished by traction upon the heated wire. At the conclusion of the operation, the surface is dry and of a clear gray color. The patient on waking from his ethereal sleep complains of very little pain. In the experience of the employment of this agent in other regions very little pain has been complained of, and when employed in the waking state, less pain is complained of than under the employment of knife or scissors.

Case 1.—Dr. C. C., aged about 45, having been in bad health for many years and a slave to tobacco, without syphilitic taint, unless inherited, observed last April a sore on the left side of the tongue opposite the molars. There is now a fissure a quarter of an inch deep on the left edge of the tongue, which is three times its natural thickness. The appearance of degeneration extends back to the anterior pillar, and forward nearly to the point of the tongue. A tumor under the tongue embraces the sublingual gland, which is indurated, and between the finger of one hand in the mouth and the finger of the other under the jaw, the tumor has the feeling of a distinct body. The appearance and the subsequent microscopic examination by Dr. Black, marked the disease of an epithelioma. A profuse salivation kept the patient spitting, and owing to the pain of mastication, liquid food had been subsisted upon for several months.

September 28th, 1875.—The bowels having been freely moved, and five grains of quinine adminstered, the patient at 9 A. M., took 20 drops of nitrite of amyl in an ounce of whiskey, and proceeded to inhale ether. The method of proceeding was that already described, six incisions or distinct applications of the wire loop were made. The sublingual gland was extirpated after the tongue was amputated, and the surface of the xcavation was still further scorched by the wire loop laid on the surface. The duration of the operation, from the commencement of etherization was 65 minutes; no blood was lost except what was occasioned by the vulsellum employed to hold the tongue, previous to the adjustment of the wire. The patient went home a distance of ninety miles, the second day, this was a hazardous proceeding, on account of the danger of hemorrhage, on the detachments of the crusts which occurred on the third, fourth, and fifth days; no hemorrhage appeared. There was some difficulty in swallowing for a few hours after the operation, but after once starting there was no further difficulty.

October 26th, the twenty-eighth day from the operation, the patient returned with a growth half an inch in transverse, and three quarters of an inch in antero-posterior diameter, on the inner side of the jaw, and along side of the edge of the tongue. The cicatrization is complete, and the tongue is much impaired in its movements, but not drawn to the left side. The patient being under ether, a thin slice embracing the diseased growth, was removed by the wire loop, after which a deeper burning was effected by a short heavy loop laid upon the surface; swallowing was not impeded by this proceeding. He walked about the next day, and the following day he went home. Under date of November 10th, he wrote: "To day being the fifteenth since the operation, I thought best to report nothing special has happened—no bleeding, sloughing all over in ten days Surface so far soft and showing no sign of hardness or tumor, appetite good, and sleep well, milk, eggs, and beef-tea, my diet—am encouraged so far; as before the tumor developed in granulating process, which is not the case now."

Case 2.—J. W. M., of Samar, Barton Co., Mo., aged 60, was sent to me by my friend Dr. Gregory. There is an ulcerative excavation along the left border of the tongue, tending back to the entrance of the palato-glossus muscles. The sublingual tissue is very little involved; the disease dates from last December. The teeth were drawn about the middle of May with the hope of benefiting the disease. In 1857, or eighteen years ago, there was an ulcer in the right angle of the lips, attributed to smoking, which healed up under the use of arsenic; he has taken arsenic several times for various afflictions, and he is now taking iodide of arsenic by the advice of Dr. Gregory. There is no increased flow of saliva; from the appearance and history of the disease, and subsequent examination by the microscope, the disease is considered an epithelial degeneration, nucleated cells being found in the tissues beyond the encroachment of ulceration.

October 20th, 1875, having taken a cathartic the day before, followed by quinine in the morning, galvano-cautery was commenced at 9 A. M. The etherization was proceded by twenty drops of amyl nitrite in a little syrup and whiskey; the proceeding was the same as that already described, but lasted longer in consequence of the want of activity in the battery, the fluid in which was not entirely new; this is an admonition never to commence an important operation by galvano cautery, without having the fluid which is to afford the current absolutely new. There was no hemorrhage and the portion removed weighed 540 grains, or 9 drachms. 21st, feels well, and is able to swallow liquids without difficulty; 22nd, the crusts are separating and the breath fœtid, the smell in his room is neutralized by hanging upon the gas-pendant a sheet wet with a solution of carbolic acid; 23rd, walks up street; 24th, bleeding last night and again this morning; stopped spontaneously. The third and fourth bleedings occurred during the day; the galvano-cautery applied; 25th, the fifth bleeding occurred this morning, a more thorough application of the galvano-cautery made a final arrest of the bleedings; 26th, walks about, subsists chiefly upon milk; 30th, went home.

November 19th, his son writes: "Father is about the same as when he reached home; the side of his face is swollen and he can hardly swallow; he complains of a weakness and soreness in his limbs."

The above cases warrant the conclusion that any portion of the tongue can be removed without fear of primary hemorrhage; it also affords the best means of combatting subsequent hemorrhage. The galvano-cautery may be imployed in dental surgery, with the most satisfactory advantage, to sever diseased growths from contiguous healthy tissues, to cauterize sinuses, abscesses of the gums, etc., amputation of such parts as the tongue, cervix-uteri, and other parts in the oral cavity, which can not be easily reached by the knife, and to control the hemorrhage from vessels that cannot be conveniently ligatured, important use of this agent may be made in its application for cauterizing nerves of the teeth when exposed, treating alveolar abscess, also, for obtunding sensitive dentine, and thus materially facilitate the after operation of filling the teeth. With a small galvano-cautery battery, cauterizing points, knives, etc., made for me by the Galvano Faradic Manufacturing Company of this city, I have for the past three years pursued a mode of practice, with the most important and satisfactory results.

ARTICLE II.

Outline of a Lecture, in the Preliminary Course, at the Baltimore College of Dental Surgery.

BY PROF. J. B. HODGKIN.

Gentlemen:—I take it that you who are assembled here in this lecture room this afternoon, are so thoroughly in earnest in your desire to learn, as to require no arguments addressed to your understandings or stimulants to effort from myself or from others, in that direction. I am quite sure that not one who has matriculated for this winter's course of lectures, is disposed to do any other thing than to earnestly grapple the scientific and practical truths which may be presented to his mind, and with a firm determination to master them; that they are not anxious about anything so much as that they shall get the utmost good of their coming here, and shall carry away with them all of Dentistry that they can possibly learn. And taking this for granted, I feel that these facts gives me an advantage in speaking to you, which I can hardly underrate. For if it be true that any enthusiasm of the lecturer is communicated to the hearer, it is even more true, in a lecture room at least, that a class brimming over with zeal, and yearning after the truths of science, may incite the lecturer to efforts which the presence of a listless audience could never inspire. I feel then that I need only bespeak your attention in order to obtain not only a respectful hearing, but a cordial, unreserved confidence.

It may seem strange to you, that I use this last word, *confidence*, but constant contact with students has led me to conclude that such is the perversity of human nature and such the reliance of young men on their own judgment, and such often the undue influence of their previous training, that they in occasional instances seem to conclude that they know enough before coming here, and that their presence in an institution of this kind is only in deference to a preverted and erroneous public opinion which requires such presence and such tuition. The "smart young man" of a class, who knows everything beforehand, is not a pleasant subject for teaching, and often he finds that his previous knowledge is of little practical use, I had almost said it is well when he does find it out. Indeed if I could have it so,—if I could have the direction of your previous mental training, I am not at all sure that I should select a "preceptor" for the purpose, but should prefer you to take your "course of lectures" *first*, and your pupilage afterwards. It is quite certain the individuality of eight men is collectively less likely to influence you injuriously than the individuality of one, whose methods of practice, assuming that he allows you a full insight into them, are likely to be more or less influenced by his needs.

As we face each other to-day, I feel more than ever the importance of a condition I have previously hinted at,—a condition of cordial receptivity on your part. I tell now in the outstart, that you will lose little and gain much by throwing away all spirit of cavil and doubt, and accepting as the truth the utterances from this desk. It will save you much discomfort and uncertainty if you willingly and heartily take what is taught you here as the *truth*, and assume that those who make utterances seemingly at variance with your preconceived notions have authority for their statements; that they have investigated these things and bring you as the results of their research the truths of science. And indeed it is obvious to you that this is the end and aim of establishing a Dental School,—that the labor of individual investigation may be crystallized, and the work of solitary thinkers and discoverers, scattered here and there, collected and utilized, that you may enjoy in full the results of these labors.

But I pass this part of the subject, and briefly call your attention to a few thoughts in connection with our work for the winter. And in respect to the nature of it, it is well to say that it differs so materially from the development required in any other profession, as to make ours a peculiar occupation, calling for peculiar talents as well as special training. Our work divides itself into—

Head Work.

Hand Work.

Now I have yet to see the student who did not at the first underrate the importance of the first division I make, and overrate the importance of the last; and it is on this account that I wish to speak of it at the outset of our winter's study. I have said that our occupation is a peculiar one, calling for special talents and gifts. The lawyer, the physician, the journalist, the merchant perhaps, needs mental training only. The barrister may be so clumsy with his fingers as scarcely to be able to tie up his bundle of papers, but this awkwardness does not interfere with his efficiency at the bar. The physician, now that the days of the lancet are numbered, need have no other use for his hands—unless he practices surgery, which is fast passing into the hands of the specialist—than will serve to tie his horse, or write a prescription; and so with others. But the dentist is nothing unless his tactual dexterity is cultivated to a sense more delicate than that of vision itself; and he must combine and unite with this delicacy of touch, strength, endurance, quickness of perception, a precision of execution little less than is called for in the highest developments of art in any direction. So, students, early recognising this as so important, are anxious to let no opportunity slip of cultivating their fingers, and are too apt to neglect the other and more important pursuit, the acquisition of knowledge.

I am quite sure that you will agree with me ten years from now, on this subject, although it may seem a hard thing to accept at present. But if we consider the matter a few moments, we will see that in order to be able to *do*, we must know what to do; before we can execute, we must conceive; before we can cure disease we must know its origin, its manner of progress, its probable conclusion or result. "He that follows must always be behind," is an old maxim, and if you only learn routine practice, failing to grasp the great fundamental principles which underlie science,—and only hard study will enable you to do this—you will find yourselves very helpless when, working for yourselves, you meet with cases which depart from the route you mechanically pursued. If you do not learn to think for yourselves, to diagnose with precision, your work as dental surgeons must be uncertain, and your triumphs over the difficulties inherent in your profession less numerous than your failures; you will surely retrograde following a beaten path of practice; you cannot but advance if you lay firm and broad the foundation of your profession in your minds.

Had we the time,—but how little could we learn in this way in the few short months we are together here!—we would prefer going to the fountain head of all instruction, and study out from nature for ourselves the whole problem of dental practice, with its correlated branches. But the whirl of events push us, and we must get our knowledge in any and every way that it will come to us, taking advantage of all the adventitious aids we may be able to obtain, and taking in first and analyzing afterwards the theories we hear and read; for mental digestion is like that of the ruminant animals, and it is not difficult to put away facts for reconsideration.

Further back I stated that no one can execute that which he cannot conceive. The mind must be the guide of the eye and of the hand; and I take occasion to say further, that no man is so safe as he who has a good theory to work by. The men who decry *theoretical* knowledge, and who vaunt themselves as superior on account of their *practical* skill, little realize how entirely they are dependent on the very theories they sneer at, little see that but for the *thinkers* they would have nothing to practice. It is not on account of their theories that these fail in the execution of their schemes; it is rather due to the fact that the power to conceive and to execute are seldom equally resident in one individual; but you readily see that the theorist must always precede the hand worker, in this as well as other professions. That the combination of the two qualities is rare, is not due to the fact that the theorists' mental powers were developed at the expense of his physical; there is a law of compensation in nature, but it does not hold good here.

I would like to encourage you in this pursuit of knowledge if it were only for the sake of knowing, to animate you to enthusiasm by the examples of the illustrious men of your to be profession, showing you that no knowledge comes amiss to its fortunate possessor. But I will consider this branch of the subject in a different aspect, and on a lower plane, and show you how in a merely selfish and mercenary point of view it is important that you acquire not only a knowledge of the facts directly related to your future practice, but those remotely related, and more directly related to the practice of medicine, of which we consider our calling a branch. It is very certain to my mind,—long observation has made it perfectly clear,—that just in proportion as you prove yourself the peer of your medical associates, just in that proportion will they respect and esteem you; just in proportion as you show that you are possessed of knowledge about *their* work, they will look on you with deference, and consult your opinion with confidence. One need not indeed make a parade of his knowledge, and display his weakness of judgment as he shows his acquirements, but he can and should cultivate the society of medical men, and be able to discuss with positive knowledge, questions directly or remotely related to the dental organs;—and you will see further on in these lectures that this is a more complex subject than you dreamed of;—and it is probable if you are sagacious you can show your medical friend that you can help him in many an obscure diagnosis. So that, looking at this matter in only this selfish way, we must see that the broader our cultivation, the more certain our success, the more positive our gain; and success and gain are strong inducements to most men.

But there is a higher aim than this of which for a moment I speak before I conclude. We are as I said, members of the healing art, brothers of the great fraternity whose noble function it is to assuage the pangs of suffering humanity. It is our noble privilege,—and can there be a more exalted calling?—to relieve the suffering sons and daughters of men of suffering, all the more formidable on account of its disastrous consequences, taking into its injurious embrace almost every organ of the system. We may not be successful in making fortunes out of our profession—the talents that give success in that direction, would give success in any pursuit in life; we certainly will not be successful in avoiding hard work. Our calling is one of the most laborious of the professions. But here on this broad platform of the HEALER, here on this elevated field where we stand by the side of and feel ourselves the peer and equal of the physician, we may and should find scope for our highest power and feel that in the exercise of the accumulated knowledge and skill, we are compensated in a way which no fee or reward can bring us. Doing our full duty to our patients is itself a most honorable, dignified, ennobling pursuit. See to it that you do this fully.

"What is our duty," may be hereafter considered.

ARTICLE III.

The Unity of Force. Electricity its Superlative Velocity.

BY JOHN J. CALDWELL, M. D., BALTIMORE, MD.

All phenomena of the organic and inorganic world are now being interpreted in terms of matter, motion, and force. The pilot idea of the doctrine of evolution at the present day is, that everything proceeds from the simple to the complex; and that behind all the manifestations of matter and of mind, lies the "Unity of Force." It is the acting, living, persistent principle which ever sits at the loom of time, arranging the position and the texture of the threads that make up the web.

This ancient weaver, "Force," has received many appellations. When force coheres among molecules, we call it cohesive attraction. When it asserts itself among the ultimate atoms, constructing them into the delicate and beautiful crystal, we call it the crystallizing force. When engaged in uniting kindred atoms, we call it chemical force or chemical affinity. Our meaning, however, is sufficiently indicated without further extension of the list of forces.

Nature delights in prodigality of result, but she is parsimonious in the number of her working powers. Given a little matter and motion, and she will construct a world.

The lines of force radiate in all directions, always acting, always persistent. Difference of result is but the product of the same force differently conditioned. A tree and a mammal owe their origin and growth to the same parent force.

In the ultimate analysis we reach simplicity of cause and "unity of force;" there is "unity in variety and variety in unity." All that science can do, armed and equipped as she now is, if truthful to her high calling, is to recognize the important fact that, back of all working energies of nature, there lies the light of a universal intelligence, so guiding, controlling and compounding the manifold manifestations of "force," that the final outcrop of all shall redound to the best good of the creature and the everlasting glory of the Creator.

We have indicated the essential unity of "force," and the great diversity of its results. What "force" is *per se*, we know not. We can only watch the play of its untiring activities through the realm of nature.

Mysterious essence, vital " force,"
We fain would all thy secret know ;
Would find at last the hidden source
From whence thy powers ever flow.

But ours, alas ! is finite sphere :
A larger vision, by and by,
May be, will solve what puzzles here,
Till then, on trusting faith rely.

Perhaps one of the most impressive instances of the play of *force* is to be seen in the phenomena of light. Light is but the result of the rapid oscillations of ether waves. Hundreds of millions of these waves strike the retina per second before we are conscious of the sensation of light. How this sensation is translated into consciousness, is a mode of force of which we know nothing. One fact, however, has been determined, viz : that color is a result of motion. Less rapid oscillations are required to produce in us the sensation of the red, in the spectrum, than of the violet. Electricity, which is the most intense of all light, is but a product of exalted motion; this can be illustrated by suspending a rod in a darkened room, with machinery attached, so as to increase its motion at pleasure. A certain degree of motion produces sound; this motion increased, produces heat; a further increase produces all the colors of the spectrum in their regular order; the utmost rapidity of motion produces electric light. What more beautiful demonstration of the unity, and yet diverse action of motion, which is only another name for " force."

But it were useless to detail a tithe of the protean results of this silent, mysterious agency. Force, being persistent, must always act; it must produce results. Harmony in results implies harmony in the conditions under which force is brought to act. Want of harmony in results implies a want of harmonious conditions. Hence what are called freaks of nature, monstrosities, and all forms of diseased action.

The theory of wave-motion in the ether had its origin in the wave-motion of the water and the atmosphere. The ear sustains the same relation to sound that the eye does to light. There is a close analogy between the harmony of sound and the harmony of colors. The rhythm of sound has its unvarying conditions in reference to the human ear. Atmospheric vibrations, when they exceed a certain number per second, lose their individuality and become merged into hum or indistinct sound. The auditory nerve is adapted to take in the whole range of the gamut. Sounds, higher or lower, in either direction, cease to be distinct. It is of no consequence whence we obtain our illustrations of the play of force; we still find it, in ultimate analysis, persistent, and a unit. The harmony of the universe is everywhere apparent. Order, design, adaptation, and law are everywhere discernible. Its workings are written in letters of living light throughout the organic and inorganic world. It flashes in the light and glows in all the colors of the spectrum. It proclaims itself in all the harmonies of sound, and in the most complex workings of the brain. Ever-boundless space is its work-shop, and never-ending time is constantly recording its mighty results.

It remains to say a word in reference to the more special manifestations of force. The human system furnishes the appropriate example. From the persistence of force we can but conclude that between the mind and the body there is the closest relation. Sensation, thought, and our most involved sentiments imply the destruction or waste of the grey tissues of the brain molecules. This waste is only another name for one mode of the play of force. In one word, man is but a product of force acting, in the first instance, on a germ, hardly microscopic. And mind with all its wonderful and complicated powers, is evolved from the simplest beginnings. A Raphæl or a Newton was evolved, in common with the lowest order of animal life, from the same dynamic, controlled and governed by the same law, which has its fitting conditions and relations. Want of harmony in these, as we have already remarked, implies want of harmony in result. A healthy mind, healthy morals, and a healthy religion, are the resultants of the unimpeded action of force.

A knowledge of the brain and of the network of the nervous system should be the aim of every physician who would minister to a body or a "mind diseased." The ability to maintain a proper electrical medium, through the exaltation or depression of nerve power, is requisite to every practitioner who would understand thoroughly, the nervous system.

Electricity's path to empire will perhaps be for a long time clogged with doubts and rejected theories. She is now making rapid strides. She is carrying the science of medicine ever onward beyond the ancient landmarks, enriching it with new truths and crowning it with new laurels.

Precisely how electricity acts as a therapeutic agent no experimenter has satisfactorily explained. Though savans, at home and abroad, have elaborated ingenious, erudite theories, still we will maintain our text, "The Unity of Force."

We will further note that electricity is but another name for the most exalted motion known to the human intellect. We are thus enabled, in some degree, to comprehend its action upon the human system, and its appropriate place in medicine, and its action through the brain and its infinite ramifications.

Nerve Velocity is - -	60	yards per second.
Sound " " - -	332	" " "
Cannon Ball Velocity is -	550	" " "
Light Velocity is -	300,000,000	" " "
Electricity " " -	450,000,000	" " "

From the preceding table it can be readily appreciated how electricity's direct action may accelerate our natural forces, how its reverse action may depress them, or how its direct or chemical action may dissipate morbid growths or change cell structure; how, through its instrumentality, we may dilate the vascular system, accelerate the vaso-motor nerve action, or how, through the sympathetic ganglia, exalt the trophic powers, or produce inhibitory action, which effect, as remarked by Althaus and other investigators, is caused if the galvanic current is continued, the spinal cord remains insensible to any excitation. "On breaking the circuit, mechanical or electrical excitation of the cord will again give rise to tetanic convulsions of the limbs." The pneumogastric nerve acting as an inhibitory power to regulate the heart's action, when severed upon the cardiac side, causes the heart to suddenly attain a velocity of 100 to 200 per minute.

Should the positive pole of a constant current be placed upon the proximate, and the negative upon the distal extremity of the severed nerve, with a gentle direct current in force, the inhibitory power will again manifest itself, and govern the heart's action in a normal manner. If the same experiment be tried upon the sympathetic of either side, at the cervical juncture, we have somewhat similar phenomena in regard to the nutrition of the parts; for, following the incision of the sympathetic, we have a rapid engorgement of the ear, and side of the face and neck, the parts assuming a crimson hue, from vaso-paralysis. Now, should the galvanic current be applied to the proximate and distal end, the circulation will be restored and the parts will assume their normal condition. (See experiments by Brown-Sequard, Cyon brothers, Hitzig, and others.)

Nerve velocity being but 70 to 90 yards per second, may be wonderfully increased by the influence of the direct current of electricity, especially Faradism. For, under the influence of opium, alcohol, cold, or other paralyzing agents, its velocity may be reduced until life is nearly extinct. In this lowest condition of vitality the scientific application of Faradism may restore nerve force, and re-vitalize the patient. (See my paper on "Electricity as Restorative Agent in Narcosis and Asphyxia," in the *Virginia Medical Monthly*, Nov. 1874, published by permission of the committee of the American Medical Association, 1874.)—*Dental Register.*

ARTICLE IV.

A Few Thoughts concerning the Treatment of Lower Bicuspid Teeth.

BY A. W. HARLAN, CHICAGO, ILL.

Considering the fact that a large number of lower first molar teeth are lost prior to the thirtieth year; and partly in consequence of this, but more particularly, because of an imperfect development of the second molars, they too are lost; the conservation of the lower bicuspids becomes a question of importance; and as will be seen further along, of so much importance, that I am induced to produce a few thoughts with reference, first, to their liability to decay, and second, as to their proper treatment. I had been disposed to believe that the lower bicuspids were the teeth most likely to remain in the mouth during life, excepting only the teeth anterior to them in the lower jaw; but owing to causes over which their possessors have no control, noticeably their early eruption and consequent feeble organization, they are gradually becoming an easy prey to dental caries. By consulting the tables of John Tomes, Magitot and the late Dr. Hitchcock, concerning the relative liability of teeth to decay, we find that the first named gives, as to number of bicuspids, both upper and lower, extracted, on account of caries, 620 out of a total of 2683 extractions, or a little less than one-fourth of the whole number being bicuspids. M. Magitot, in 10,000 cases, recalls 2620 carious bicuspids, of which 1750 were upper and 870 lower; making it appear that to one decayed lower bicuspid, there was a fraction more than two of the upper ones, similarly affected, while Dr. Hitchcock, in 20,000 cases, reports 4658 of these teeth decayed, 3303 of which were upper and 1355 lower bicuspids; attention is directed to the tables of Dr. H., because they show, that, to one of the lower nearly two and a half of the upper bicuspids are attacked by caries. Not questioning the correctness of these compilations, I venture to state the belief, that climate, habits of life, particularly as between cities and the country, indulgence of the appetite, during the producing seasons, in sugar, grape and cider districts, and the prevalence in certain portions of the country of rheumatism, malarial and other fevers, if taken into account, would modify materially (were the statistics quoted) the at present supposed preponderance of carious upper teeth, over those of the lower jaw. I present herewith, the results of my own observations respecting these teeth, when operated upon *exclusively*, for filling; these cases passed under my notice, during a period extending over five years; they comprise all nationalities, with a preponderance of Americans. In 760 cases under treatment 340 presented carious upper and 264 carious lower bicuspids. Total number of teeth requiring treatment in the upper jaw 681, while in the lower jaw there were 507. The way in which the decays can be shown is as follows: In 45 cases 4, 48 cases 3, 110 cases 2, and in 137 cases 1 upper bicuspid had to be filled; in 26 cases 4, 37 cases 3, 90 cases 2, and in 112 cases 1 lower bicuspid was filled. Taking the total number of teeth that were filled, it may be seen, that, with regard to the relative liability of teeth to decay, my little table does not correspond with the ones above presented. It is true that very many more dentures are constructed for the upper than for the lower jaw; but this fact of itself does not prove that it was necessary on account of caries, for those teeth to have been extracted. It is a well known fact, that many persons, of their own accord, and others following the advice of cheap baseworkers, suffer the loss of the upper teeth, and at the same time are extremely solicitous about saving the lower ones, fancying, from the experience of others, that it would be troublesome, and sometimes, almost impossible, to wear comfortable a lower denture; again, it is only necessary for a practitioner of long experience to draw on his recollection to find numerous instances where he has been importuned to extract *for the upper jaw* teeth that were sound, but irregularly arranged, and on his refusal to do so persons have sought less scrupulous hands, where such requests are readily acceded to.

These, and various other circumstances, in addition to the results shown by my records, and a close observation of teeth upon which I have not made operations, lead me to express the belief that the lower bicuspids are not very much less liable to decay than the upper ones ; taking this view of the subject, the question of their proper treatment is not an inappropriate one. There are a few things which should be scrupulously attended to, preliminary to filling, not these teeth alone, but whenever a considerable number of fillings is to be inserted, among which, is the removal of adjacent or other badly decayed roots of teeth, also all deposits of salivary calculus; and if there be any abnormal condition of the gums, other than that superinduced by the above causes, it should also be corrected either before or during the operation of filling. After these initial steps are taken one other thing may be done, for the comfort of the patient, by filling temporarily the larger cavities in these teeth, for from one to three weeks, or longer. When the necks of these teeth are sensitive, and the secretions apparently normal, much benefit will be derived from a rigorous polishing, using a wooden point dipped into a paste of alcohol and precipitated chalk. In the mouths of the young, I treat incipient caries with a disc, and polish and repolish, from time to time, until I am satisfied that decay will not recur. There can be no excuse in these times for neglecting to discover the presence of caries. A thorough examination of the teeth, though it be difficult of accomplishment, will save yourself from after humiliation, and the patient from much pain, and possibly the loss of a tooth. A paper was read at the recent meeting of the American Dental Association, in Chicago, by Dr. L. C. Ingersoll, of Keokuk, Iowa, entitled, " Is the Dental Pulp essential to the integrity of the Dental Structure? " I have not the time, or space, or inclination, at present, to attempt an answer to the above query, but will say, that I believe the dental pulp *is* essential to the integrity of the dental structure, and especially so with reference to the lower bicuspids. An attempt should be made to save the pulps of these teeth, if for no other reason than that it is their normal condition to be supplied with them. It seems to me that no argument is necessary to sustain a position in favor of saving instead of destroying the pulp of a tooth. Mine is a flexible rule, on the point of capping an exposed pulp. I have had more success by using some substance between the pulp and oxy-chloride of zinc, than when it was applied to the point of exposure, *after* the pulp was bathed in creosote. One thing should be kept in mind, that is to use a material non-conducting, hard, and one which will not occupy much space when in position.

If the pulp is already dead or dying, nothing can be done except to treat and fill the root. It is not as easy to break up an abscess on a lower bicuspid root as upon an upper one; this is explained in part by the position of these teeth in the mouth, many of them leaning inward and forward, making it a matter of some difficulty to enter the root canal, especially if the cavity is situated on the distal surface of the tooth. My own practice when dealing with pulpless lower bicuspids is, no matter by what method, to cure all that are abscessed, and fill the roots perfectly (if possible,) with an indestructible material.

" To separate or not to separate " is the question. If the molars are present, I generally make separations, patterned after Arthur's system, but when they are all gone, and the bicuspids are of good structure, it is better in my opinion to contour them. If a patient is careless about cleaning his teeth, he will receive more benefit at the hands of a dentist who permanently separates them than he will if they are restored to their natural shape. One reason in support of this is, that he will be compelled to use a toothpick, or floss silk to be comfortable after eating.

The question of permanently separating the teeth, in a measure limits our choice of materials for permanent fillings to two, as we cannot rely upon tin for contour work. After filling the root of a lower bicuspid tooth, I consider that all or nearly all, of the preliminary labor is thrown away, if the cavity be filled with amalgam. We need not hope to preserve such teeth for a longer period than five years, if they are so treated. When we find small proximal, or labial cavities in these teeth, I believe with Prof. Judd, that "as it is not the amount of material used but the time consumed in performing the operation, for which a charge is made," we ought to fill such cavities with gold, instead of tin, or amalgam; however, there are teeth which, when filled with tin, remain free from caries, as well as those the are filled with gold; but its use is limited to proximal cavities mainly and then I prefer to make wide separations before using it. When a case is presented to my notice, where these teeth have not been filled, I cannot persuade myself that it will be to the best interest of the patient to fill them with amalgam. If we fill the crown cavity of a lower bicuspid tooth with amalgam, we cannot be sure that in a few months or a year or two, there will not be a labial or proximal cavity in the same tooth; and in the event of such being the case, we are compelled, either to remove the first filling, and fill the cavities with gold, or insert another filling with amalgam. Would it not have been wiser to fill the crown cavities with gold in the first place?

Avoiding all reference to the appearance of teeth filled with amalgam, and the discolorations coincident with its use therein, and its known liability to shift after being placed in the cavity (all very serious objections, especially when used anterior to the molars,) what brand of amalgam in this or any other country, that will exclude air and moisture from a cavity in a tooth as perfectly as gold? Until a non-shrinkable, and a non-oxydizable plastic filling material is discovered, we cannot hope to obtain results at all comparable to those which are to be secured by the use of gold.

To sum up my idea about the treatment of the lower bicuspids, would be to say: use, if you would be successful in filling these teeth, gold first, tin second, and amalgam rarely if ever—*Missouri Dental Journal.*

ARTICLE V.

The Connection between Excessive Nerve and Brain Worry and Bodily Disease, with Pathology and Treatment of Cancers, Tumors, Etc.

BY J. J. CALDWELL, M. D.

In a second article, on the development of carcinoma, published in Virchow's Archives of June, 1872, by Professor Waldeyer, he substantially reaffirms the similarity of development between the so-called epithelial and other cancers, admitting that the elements of the small-celled brood are migrated white corpuscles, and that Kœster's view, that the cancer cylinders lie in the lymphatic passages, is very correct, still holding firmly to the doctrine that "the cylinders themselves are always out-growths from some normal epithelial structure with which they yet retain their connection.

We trust you will pardon us, Mr. President, when we modestly express our surprise that little or nothing, as far as our knowledge extends, occurs among the writings of the greater savans concerning the influence exercised by nerve currents or powers on cell formations, beneficially or detrimentally.

It occurs to us that the nerve force, in its effects and action upon cell structure, presents a close analogy to electro-plating. Indeed there is such an intimate alliance between these two mysterious forces as to render distinction between them inappreciable by the human intellect, except, as it was said by Sir Wilson Phillips, of London Academy of Science, that "the latter is incapable of restoring the vital spark to departed ones."

As an illustration of this analogy we would refer to the changes presented by the phenomena in electro-plating, with varieties of the battery, elements, and fluids. Contemplating these, it is not difficult for us to suppose that like irregularities could be affected through varying influences of nerve forces at the centres and peripheries. We candidly believe that until this hidden power, nerve influence, is more fully comprehended in its relation to cell formation, we will continue to remain in that condition, lately, in an able manner, defined by one of our popular journals, when referring to Prof. Brown Sequard's beautiful lecture, recently delivered on the "Mechanism of the Brain."

After referring to the doctor's undoubted ability and his demonstration of the seat in the brain of the volitional, sensorial and mental phenomena, the Journal remarks that we "are just as far from knowing anything about the mystery as was the devotee who gazed on the problem in the Temple of Sais, which told him, 'I am all that I was, all that is, and all that shall be.'"

Spite of the great research and application of modern science upon this subject, no man has yet been able to place his learned touch upon the precise spot of human cerebral anatomy, when in search for the seat of sensorial and mental phenomena, and exclaimed *Eureka!* It is to be feared that all, yea the most ardent devotees of science and searchers after the hidden truths and grand mysteries of our organism will only be led to repeat, "I am all that I was, all that is, and all that shall be—*and my veil hath no man raised.*"

It was brain worry and not brain work that caused the death of the sceptered hermit of the rock-bound St. Helena. Like Prometheus of old, he died not from a vulture destroying his vitals, but the humiliation and chagrin of his fallen position fretted his proud and lofty spirit, thus through its excessive irritation developing that most formidable disease termed carcinoma of the stomach. Yes, he died from carcinoma of the stomach, caused alone by the ever-chafing mental chains. While at liberty, his ceaseless and tireless mental energies only seemed to make him more and more patient. For this man, without a model and without a shadow, could never brook this continuous irritation, which so reflected itself as to produce that horrid pathological monstrosity called cancer. This is not an isolated case, for we may cite from many authors of our day, cases directly illustrating the effect of mental irritation in producing bodily disease. Among others we may quote from the able article written by Ferdinand Papillon, entitled, "The Pathology of the Passions," wherein he declares that physicians have in all ages recorded the passions among the predisposing, determining, or aggravating causes of the majority of diseases, especially the chronic diseases. The work of the passions might be compared to the operations of a beleaguered city. They set about overmastering health and life circumspectly and slowly, but their advance is always sure, and of the most disastrous, in effect, when in excess. We may mention love, anger, melancholy, hate, etc. In exaggeration, these may become poisonous both to soul and body; for there is one form of melancholy which is plainly a variety of dementia, and often comes under the notice of the physician. It is characterised by an incurable sadness an irresistible love of solitude, a belief in a host of imaginary evils ever haunting the patient. "My body is a burning fire!" wrote a melancholic subject to a medical man, "my nerves are growing coals! My blood is boiling oil! Sleep is impossible!" Here we readily see the connection between excessive mental irritation and bodily disease; for such a patient would soon succumb, perchance from brain softening, cancer of the stomach, blood degeneration, or other serious malady of this earthly tabernacle, this feeble tenement of the hour, unless some remedy be applied, a remedy indeed directly appealing to the brain and nerve centres, or in the words of the immortal bard, when the physician "can administer to a mind diseased, or pluck from the memory a rooted evil."

Treatment.– In this connection we would cite the remarkable success which the learned Althaus of London has met with in the treatment of cancerous tumors by electrolysis. Of sixty-three cases treated by him up to 1868, by electrolysis, fifty-two were non-malignant and eleven of the malignant kind. The total result of the former was sixty-two per cent. cured, twenty-six improved, and twelve unknown. The doctor remarks that almost all the unsuccessful cases occur in the commencement of his electrolytic practice, when the method of procedure had not been so well developed as it is now.

"The facts that the peculiar lancinating pains of cancer generally disappeared soon after the commencement of the treatment, and that, even in rapidly growing cancers, the growth is often checked by it, seem to show that, by steadily working in the same direction, a remedial agent so powerful as that of electrolysis may yet be found to be instrumental in overcoming the local manifestations of this terrible disease."

Besides Althaus we might refer to the following eminent names of those tumors by electrolysis: Benedikt, Billroth, Paul Bruns of Germany; Lawson Tait, Fagge, and Callender of England.

Mr. Lawson Tait treated a case of encephaloid disease of the femur by electrolysis, complete relief from pain, for four or five days following each application, except the first. The intensity of the pain had been so great that it had been found necessary to administer hypodermic injections of from 20 to 24 grains of morphia daily.

Bruns gives a valuable analysis of the reported cases of *nasopharyingeal polypus*, nine in number, treated by electrolysis; seven resulted in complete cure.

Neftel claims to have destroyed a number of cancerous growths with better results than usual in the way of recurrence, by means of electrolysis. He believes that the cancer cells, being of low vitality, are killed by the current, even when they are not in a position to be directly decomposed.

Dr. Gilman Kimball, of Lowell, in his report of cases of uterine fibroids, treated by electrolysis, says that "he generally found it most convenient to attack the disease through the abdominal walls. In some cases, however, when the fibroid growth had projected itself downward so as to involve a portion, or, as it sometimes does, the whole of the neck of the uterus, he made the attack through the vagina, thrusting one electrode into the tumor in that direction, and the other into the upper part, through the abdominal parietes. He witnessed no ill effect, local or constitutional, following this operation. For some hours after, the patient suffers considerable pain through the pelvic region, also some feverish excitement, as denoted by a quickened pulse, thirst and increased sensibility in the direction of the tumor. These symptoms, however, are not lasting, and in a day or two the patient declares herself entirely free from suffering of any kind."

At a late meeting of the British Medical Association, Dr. S. M. Bradley, in a paper in which he attempted to establish the essential oneness in origin of all morbid growths characterized by the abnormal development of epithelial elementry such as scirrus, epethelium epulis, and common warts, maintained that, as electricity, by coagulating the albumen of a part, establishes a barrier to the onward march of the cell elements, it should therefore be employed in all cases of infiltrating tumors, when it is decided to eradicate the growth.

Dr. J. Byrne, of St. Mary's hospital, Brooklyn, N. Y., reports seventy-three electric cautery operations in uterine surgery, his success being remarkable, most of the cases being malignant or non-malignant tumors. The operations were performed in the presence of Drs. Marion Sims, Emmett, J. C. Nott, and other eminent gentlemen.

We have also to record our own testimony in behalf of the treatment by electrolysis, from our own experience and operations for the removal of morbid growths, which, as we have already shown elsewhere, have been quite numerous. We will close this, we fear already too lengthy and tedious paper, by remarking that the study and practice of electrotherapeutics now claim the attention of the most eminent medical minds; of "men whose position and abilities inspire the confidence of their fellow-practitioners, and who are doing their utmost to rescue this specialty from the hands of unscientific men, to place it in the proper position. A great deal of good and careful work is now going on in this specialty, in all parts of the world, and the value of electricity, as a therapeutic agent, may be said to be slowly but steadily increasing." "If practitioners in general would make themselves more familiar with this therapeutic agent, and ascertain what it is capable of accomplishing, electricity would become much more popular with the profession than it has been."

65 *North Charles Street.*

ARTICLE VI.

A Case of Repeated Excision of the Inferior Dental and Gustatory Nerves for the Cure of Dental Neuralgia.

[Read before the Detroit Medical and Library Association, by Theodore A. McGraw, M. D., Professor of Surgery, Detroit Medical College.]

The recurrence of neuralgia after its apparent cure by the excision of nervous trunks has been variously explained. In cases of centric origin, as in those cases where the pressure of an intercranial tumor excites pain in the extremities of a nerve, we can only wonder that operative procedures should give even the temporary relief which has sometimes followed excision. In cases of peripheral origin we have to assume, in explanation of the recurrent pain, either that the stump of the nerve has been affected by disease or compressed by cicatricial tissue, or that actual regeneration of the nervous trunk has been taking place. Modern researches have made it evident that this latter process is much more frequent than was once supposed. In the case which I will now relate I believe that the nerve was actually regenerated, connecting anew the central organ with some unknown spot of irritation, which excited the persistent pain.

In June, 1875, I was consulted by a patient from Gaines, Mich., on account of a neuralgia, of several years' duration, of the left lower jaw. He had been a man of very strong sexual passions, and he had indulged them without stint. He had been accustomed to use tobacco freely, was a hearty eater, but not, as I believe, addicted to drink. The teeth on the left side had all been taken out to relieve the intolerable pain. Nothing could be found in the mouth or face to account for the trouble.

On Feb. 20th, 1873, he had been operated on in Philadelphia by Prof. Gross, who trephined the horizontal por tion of the bone and destroyed the nerve. The relief given by this operation continued over a year, when the pain again made its appearance in the jaw and for the first time in his tongue. It became in time so intense that he insisted upon having something done for its relief.

Assisted by his physician, Dr. Holly, of Vernon, and by some students from the college, on the 15th or June, 1875, I trephined the ramus of the jaw and cut out about half an inch of the inferior dental and gustatory nerves. His cheeks were very fat, and the bone was very dense and hard. The operation proved to be very difficult, and, as the trephine failed to make any impression on the ivory like bone, I was obliged to resort to the chisel and mallet. During this process the duct Steno became bruised, and a few days after the operation ulcerated though causing a salivary fistula. In other respects the patient did well and recovered rapidly, though it was many months before the fistula could be made to heal by appropriate treatment. He ceased, however, to suffer pain, and was well for a period of fourteen months. At the expiration of that time the neuralgia recurred. My attention had, in the mean time, been attracted to the following passage in Hyrtl's Typographische Anatomie:

"Richet relates that he had spoken with many persons who, on account of severe neuralgias of the teeth, had had this nerve (the auriculo-temporal) cut by a cobbler of the Rue des Feves, in Paris, who for thirty years had practiced this operation with immediate and permanent success, and to the annoyance of the medical faculty, with great renown. Richet convinced himself of the value of the treatment by operating upon a case of horribly painful and rebellious dental neuralgia, with the effect of the immediate relief of pain."

Acting on this suggestion, I laid the auriculo temporal nerve bare and divided it, but without any success in relieving the malady. A short time afterwards, at the request of the patient, whose sufferings were really atrocious, performed the operation recommended by Dr. Gross, and removed the whole alveolar process of the left side of the lower law. Not the slightest improvement followed the operation. Day and night the unfortunate man was tortured by the unbearable pain, which never altogether intermitted, and sometimes made him delirious with agony. Believing that the nerve had become regenerated I determined to divide it at a point still nearer its origin and to tear it loose from its connections. I hoped in this way to achieve the success which had followed the stretching of nerves in neuralgias of traumatic origin, by breaking up any inflammatory adhesions which might compress it or bind it to neighboring parts. I believe, too, that I might thus prevent its regeneration by changing its internal structure.

I operated on Sept. 28th, before the class of the Detroit Medical College, in the following manner. I made a T shaped incision with the horizontal portion just below the Zygoma—laid bare the bone and separated the upper and internal portion from the ramus with a chisel. This fragment, including the coronoid process, was turned up, leaving the nerves exposed as they came out from under the external pterygoid muscle. Pulling the nerves out with a blunt hook, I examined them carefully. They seemed to me to have become completely regenerated, passed down at the lower part of the wound where they had previously been divided without any break in their continuity until they were lost to sight. I grasped each separately with a pair of forceps and sought to pull them out from all their attachments. I had, however, miscalculated the strength of a living nervous cord, and found myself, after having made powerful traction in vain, obliged to cut them off with a pair of scissors, excising about three-quarters of an inch from each. The wound was then stuffed with carbolized lint and allowed to heal by granulation.

Healing occurred with great rapidity, and in a month the patient was ready to go home with but a small granulating spot remaining of the wound. There was, of course, paralysis of the eyelids, on account of the unavoidable division of the branches of the facial nerve. The neuralgia, however, was entirely relieved, and up to the present time he has had no signs of its recurrence. Whether the cure will be permanent, remains to be seen. I feared lest the operation at that point might cause anchylosis. This, however, is not the case. He has perfect motion and use of the jaw, and is entirely well of his salivary fistula. His long suffering has, however, broken his constitution, and his general health is wretched. He has, moreover, become addicted to the use of morphine, and has failed in many efforts which he has made to break the habit.

In view of the common recurrence of neuralgia after the excision of affected nerves and of the frequency of nervous regeneration as a cause of that recurrence, it would seem to me to be the duty of every operator to adopt such measures as would seem best adapted to prevent the growth of nervous tissue. Whether the stretching of nerves will accomplish the purpose remains to be seen; but it is at least worth a fair trial, and may be justified in practice, until experience proves its worthlessness or invention supplants it with better methods.—*Detroit Med. Journal.*

ARTICLE VII.

Observations on the Articulation of Artificial Teeth.

BY DR. AD. HARTUNG.

The most important point, in applying artificial teeth, be it a partial or a complete substitution, is to obtain a natural meeting of the superior and inferior teeth. It may in some cases be easy to accomplish this; in many others it is accompanied with great difficulty. It is easiest in cases where, by partial loss, the teeth adjacent to the gaps and those opposite have still their straight position, right length, &c., as then the position of the artificial teeth to be made is clearly known, and the biting action follows naturally. On the other hand, the more the remaining natural teeth, single or in clusters, have lost their regularity on account of the remote date of their loss, the more difficult the restoration of a natural biting action will be found. In this case all possible attention is required to supply the requisite of an artificial set, i. e. the restoration of the masticating functions. When an important difference exists between the various points of contact of both the mandibles, the execution is often above the capability of the average technical dentist. We observe in these cases the greatest blunders against a rational contemplation of the indicated relations. We see, for instance, in the case of the insertion of an artificial piece in the upper row, the still existing inferior incisors only strike with the forepart of their edges—or, it may even be, with the upper part of their front sides, upon the rubber, which forms an inclined plane; exactly as if, with the greatest exertion, the inferior teeth should be pushed backward, or, should they resist, the artificial teeth be forced forward.

A very striking proof of such a mistake I observed in a case about two years ago, in which the superior front teeth had been substituted. The artificial piece was only supported by a small natural grinder, while an existing favorable opportunity to get a contact with the lower jaw, further back, had been entirely overlooked. The consequence was that the artificial teeth now extended far beyond the inferior row, and, on account of their forward-inclined position, presented a particularly disagreeable aspect. With their sharp edges at the top they had pushed up the gum of the still remaining roots, and crowns of the opposite natural teeth were inclined forward.

Besides the enumerated disadvantages, the improper treatment throws obstacles in the way of the application of a new and better artificial piece; for instance, when the roots are still solid and the patient for different reasons refuses to have them extracted, and when the gum is loosened at those roots by the sharp edges at the top of the artificial teeth, making the protruberance of the alveoli very prominent.

In another case an artificial piece, of four superior incisors (the rest of the mouth being entirely toothless) had been driven more and more towards the tongue, so as to bring them almost horizontal in the mouth, and consequently the edges of the artificial teeth struck the front side of the inferior teeth, or at the edge of the gum.

The patient had tried in several places to get a set fit for use, but, in cosmetic respect as well as in regard to mastication, she failed, as she was not willing, under any circumstances, to have the four inferior teeth extracted, which, notwithstanding their abnormal position, were quite solid. The request which she now made me, to supply her with a set, inclined me to consider the case in a light entirely different from the view taken heretofore. My opinion was that too much consideration had been given to those still existing teeth. To include them in the row of the new set would always be a failure; therefore I treated the case as if these four teeth had not been in existence, and made a complete inferior set, so that a double row was formed where the four natural teeth remained The articulation was produced in the usual way. Not to force the natural teeth still further away, the inferior artificial piece was worked in such a manner that in putting it in they slide through a corresponding opening in the hind centre part of it, and in this way rested on a rubber base, while a support for the set was gained at the same time. I felt myself justified in treating the case in the way described, as the patient assured me that the teeth in their abnormal position did not trouble her in any respect, and that the mouth was otherwise entirely in its normal condition. The appearance was very good, and mastication was exceedingly well performed.

After a few years I saw the patient again; the set was still used by her with the same success, and the four inferior teeth remained.

When the jaws are still provided with a few single teeth without any opposite, they are usually very much out of order as to direction and height. Although in this case a good biting action can be produced, yet often the construction of artificial sets is very faulty. In one case an artificial upper piece was broken twice in succession by the solid natural lateral inferior teeth, because they struck the lateral parts of the palate plate only with the outside of their crowns then slid upwards, and working, as it were, knee-shaped forced the plate apart. Had the plate been stronger, and able to longer resist the described influence, the prejudicial consequences would soon have manifested themselves at the respective natural teeth—they would have yielded toward the inside.

By such improper work the operator usually loses sight of the hypothesis that the teeth have to strike each other in such a way *that the direction of the strength in masticating is that of the axis, lengthwise through the teeth*, and should not in the slightest degree cross the axis. This rule is just as well to be observed when the point to be struck is an artificial crown, as when rubber is used. In both cases the surface of the crown has to strike as fully as possible. Therefore I take the wax mould rather broad, to get the full impression of the crowns. Should, however, a natural tooth have so far deviated from its normal position as to make the foregoing hypothesis not applicable, it should, by a proper arrangement of the artificial piece, at least receive a support at the inclining side, to prevent it from a further deviation.

To avoid the denounced errors in artificial substitution, an accurate articulation is, of course, a point of first importance. To give any further information on this point, and how to attain it, would be superfluous after the discussion at this year's meeting of our Schleswig-Holstein Colleges at Kiel. Only this I want to observe that, to my observation the articulation can generally be accomplished in the most accurate and natural way during a perpendicular position of the body and a corresponding direction of the head. Therefore I only admit, as an exception, the correctness of the remark of Dr. Humm, that the bending backward of the head is needful to obtain a correct biting action—just as well as I know that my observation that I "sometimes, in difficult cases, attained the object by bending the head downward," cannot be taken as a general rule. In these cases I cause the chin, while the mouth is open, to be lowered as far as possible on the breast, and fasten it there. To close the teeth, the head should be moved downward to the lower jaw; then particular care should be taken that the patient, when lifting the head, does not lower the inferior jaw in order not to separate the rows of teeth from each other. In this way I often succeed in getting an accurate articulation and the correct biting action when I have failed in all other ways.—*Dental Office and Laboratory.*

ARTICLE VIII.

How to Have Good Teeth.

BY A. HOMER TREGO, D. D. S.

There is scarcely a subject of a personal character so sadly neglected and so little understood, by the people in general, as the care of the teeth.

In view of this fact, in 1869, the Odontographic Society, of Philadelphia (about 100 members of eminent ability) offered a prize for the best essay on the subject; the same to be published for the benefit of the public.

The prize was awarded for the following:

RULES FOR PRESERVING THE TEETH.

1st. *Cleanse* your teeth once, or oftener, every day! *Always* cleanse them before retiring at night! *Always* pick the teeth and rinse the mouth after eating!

2d. *Cleansing the teeth* consists in thoroughly removing every particle of foreign substance from around the teeth and gums.

3d. *To cleanse*, use well made brushes, soft quill or wood toothpicks, an *antacid, styptic toothwash and precipitated chalk.* If these means fail apply to a reliable dentist.

4th. *Always* roll the brush up and down lengthwise of the teeth, by which means you may avoid injuring the gums and necks of the teeth, and more thoroughly cleanse between them.

5th. *Never* use a dentifrice containing acid, alkali, charcoal, soap, salt, or any gritty or powerful detersive substance.

6th. *Powders* and *pastes* generally are objectionable. They injure the gums and soft parts of the teeth, and greatly assist in forming tartar. *A wash*, properly medicated and carefully prepared, is pleasanter and more beneficial. It dissolves the injurious secretions and deposits, and the whole is readily removed with the brush and water.

7th. *Avoid eating hot food!* Thoroughly masticate and insalivate the food before swallowing it. Frequent indulgence in sweetmeats, etc., between regular meals, disturbs the regular process of digestion, and a viscid secretion is deposited in the mouth (from the stomach,) which is very injurious to the teeth.

8th. *Parents!* Carefully attend to your children's second dentition. Gently prevail upon them, at an early age, to visit, at frequent intervals, a careful and skillful operator.

Remember that four of the permanent double teeth came in at about the age of six years. They are very liable to decay early, are very large, and should never be allowed to require extracting.

Children do not " shed " their teeth as they did in former ages. Instead of being trained to masticate nutritious food they are tempted with and allowed to " gulp down " delicacies, hot cakes, hot beverages, etc. Thus, by depriving the teeth of their natural function and overtasking the stomach, a morbid condition of the general system is produced; the " first teeth " are prematurely decayed, and the permanent set are not matured at the proper period of dentition. The consequences are terrible.

9th. *Never allow any one to extract a tooth*, or to dissuade you from having them filled, unless absolutely necessary. Many so-called dentists, actuated by selfish motives advise extracting, and sacrifice many teeth which competent operators can render serviceable for many years.

10th. *Carelessness and procrastination* are responsible for a large majority of teeth that are lost.— *Western Science Review.*

EDITORIAL, ETC.

We are indebted to Albert Ritchie, Esq., for the following decision:

Circuit Court of the United States, District of Massachusetts. In Equity. No. 729a—Goodyear Dental Vulcanite Company vs. Charles G. Davis. Same vs. Defendants in sixty-seven other cases.

OPINION OF THE COURT.—SHEPLEY, J.

The patent and its reissues, granted for the invention of John A. Cummings, of "an improvement in artificial gums and palates," or, as described in the claim, "the plate of hard rubber, or its equivalent, for holding artificial teeth, or teeth or gums substantially as described," have been the subject of extensive and prolonged litigation. Since the affirmance by the Supreme Court of the United States in *Smith Appellant*, vs. *Goodyear Dental Vulcanite Campany*, 3 Otto, 486, of the degree of the Circuit Court in the test case of *Goodyear Dental Vulcanite Company* vs. *Smith*, the validity of the reissued patent has been fully established. The decision of the Supreme Court in that case must be considered as final, not only as to the validity but as to the construction of the patent, which was carefully considered in that case, both in the Circuit and the Appellate Court, as it had previously been in the Wetherbee and the Gardiner cases.

In *Vulcanite Company* vs. *Smith*, in the First Circuit, this Court decided that the patent was not for a process or art, but for the new product resulting from the manipulation by the described new process, and for one of those products in which the process so inheres that the described product can only be made by the described process, and that the invention was one in which the process by which it is made is a part of the substance, the thing made, the manufacture. What the new product was, and wherein the novelty consisted in the process, we shall hereafter have occasion to consider. In the opinion (by Mr. Justice Strong) in the Supreme Court in the same case, the invention patented is thus described : "The invention, then, is a product or manufacture made in a defined manner. *It is not a product alone separated from the process by which it is created.* The claim refers in terms to the antecedent description without which it cannot be understood. The process detailed is thereby made as much a part of the invention as are the materials of which the product is composed."

If the defendants, by practising the process described by Cummings, using the materials described by him, or such materials as are equivalents, and were known equivalents at the date of his invention, in the described process, or such as, in the process, are mere substitutes of one material for another, without any change in the process or in the effect, have produced a product the equivalent of his in the described properties, and for the described functions, then, and only then, have they infringed.

The product, the new article of manufacture patented, was a set of artificial teeth, consisting of a plate of hard rubber or vulcanite, with teeth or teeth and gums secured thereto in the manner described in the patent, by imbedding the teeth and pins in the vulcanizable compound, so that it shall surround the teeth and pins while the compound is in a soft state before it is vulcanized, so that, when the compound is vulcanized, the teeth are firmly secured by the pins imbedded in the vulcanite, and there is a tight joint between the vulcanite and the teeth. This product was a new product, not alone because it substituted one material for another, the material, vulcanite, rigid enough for purposes of mastication, yet pliable enough to yield a little to the mouth, and at the same time light and inexpensive, in place of the hard, unyelding, expensive and heavy metals previously used, but also in the additional fact that it was made by a process which, taken as a whole, was a new process, by the use of which process "the teeth can easily be baked into the gums, which form one piece with the plate."

The next question to be considered is, what was there new in the described process. The whole process of forming and making a set or case of teeth, including the plate, gums and teeth is fully described in the Cummings patent, and this process is fully described in the case of *Vulcanite Company* vs. *Smith*, that it becomes unnecessary to repeat it here. It is sufficient to state that in view of the state of the art there was nothing substantially new in that process until we reach this part of the description: "The teeth are provided with pins projecting, " therefrom in such manner that the rubber which is to constitute the plate will close around them, and by means of them " hold or secure the teeth permanently in position. The plaster " mould, with the teeth adhering therein, as just described, is " now filled with soft rubber, a little at a time, pressed in with " the finger, or in any other convenient way; and care is to be " taken that the rubber is made to completely fit into the cav" ities, and around the protuberances, including the pins, and " is filled in to the thickness or depth desired to form the plate. " I then lock the rubber plate in position by shutting the other " half of the plaster mould over it, to insure its retaining its " exact form while warming, and then heat or bake it in an " oven, or in any other suitable way. The soft rubber or gum, " so inserted in the mould, is to be compounded with sulphur, " rubber, etc., in the manner prescribed in the patent of Nelson " Goodyear, dated May 6, A. D. 1851, for making hard rubber, " and is to be subjected to sufficient heat to vulcanize or harden " it substantially, as directed in that patent. It is also to be " colored in imitation of the natural gums, by mixing it with " vermillion, or other suitable coloring matter, while in the soft " state. After the plate has been heated sufficiently to harden " it or convert it into hard rubber or 'vulcanite,' so called, the " mould is removed, and the plate is polished ready for use."

It will thus be seen that an essential element of the described product, is "a plate of hard rubber or vulcanite," in which the teeth are imbedded, and an essential ingredient in the described process, is the soft rubber or gum, compounded with sulphur, rubber, etc., in the manner prescribed in the patent of Nelson Goodyear, for making hard rubber, and that an essential step in the described process is the subjecting the compound of soft rubber or gum with sulphur "to sufficient heat to vulcanize or harden it, substantially as described in that patent," (*i. e.* the patent of Nelson Goodyear, of May 6, A. D. 1851.)

The equivalent of that product thus made by that process must therefore contain the equivalent of the plate of hard rubber made and manipulated by a process equivalent to the described process of compounding a gum with sulphur, and applying it and moulding it and incorporating it with the teeth and gums, when in a soft state and then subjecting it to heat, to harden and vulcanize it in the manner described in the Goodyear patent or in some equivalent manner, or by some equivalent process.

The defendants use, in making their set of artificial teeth, a plate made of "celluloid," substantially a new material, discovered and patented since the date of the Cummings invention. This substance is compounded of cellulose or vegetable fibre and camphor. No rubber or other equivalent gum, and no sulphur or equivalent for sulphur in the process, enter into its ingredients. It is not a vulcanizable compound, and contains no vulcanizing agents, in its composition. The camphor in its composition, instead of being a vulcanizing agent, causes the composition to soften instead of harden under the influence of heat. The product, when compounded, and before being subjected to heat, is not soft, like soft rubber under like conditions but hard. In the manipulation of this material, the process of making a set of teeth, composed of the plate and teeth and gums, is an entirely different process from the process described in the Cummings patent, when compared with that part of the Cummings process which was new in the state of art, and the novelty of which part gave to the Cummings process, when considered as a whole, the ingredient of novelty and patentability. It is not placed in the mould in a soft, plastic condition, "a little at a time, pressed in with the finger, or in any other convenient way," but in a hard, rigid condition, like horn or bone or ivory. It is then subjected to heat, not to vulcanize or harden, but to soften it. It afterwards, on being cooled or restored to its original temperature, returns to its original condition as a hard substance, as when first placed in the mould. No vulcanizing process, or even process of hardning by heat, and no equivalent for any such process, is practised. In the light of these comparisons, it appears evident to the Court that the use of celluloid in the manufacture of sets of artificial teeth, as practised by the defendants, and the manufacture itself, the set or plate of teeth, differ as much, both as to process and product, from the process and product described and claimed in the Cummings patent, as that process and that product differed from those previous manufactures which existed before the Cummings invention, and were unsuccessfully relied upon as anticipating it.

It is true that this construction of the Dental Vulcanite Patent narrows the scope of the patent. It is urged, with much force, that if this be the true construction, it would follow that if an inventor invented at the same time a new process and a new product, he would by such a construction of his patent lose the benefit of it, unless the infringer used his process or an equivalent one to produce his prodnct or an equivalent one. One answer to this objection is, that in the case supposed, the inventor might patent both the new process and the new product, and thus fully protect himself. In its application to this case, it is believed that the objection is without force, for the reason that such a construction of the claim of this patent is the only one which makes the claim a valid claim. To abandon the construction which makes the product patented the new manufacture, when made by the described process, is to abandon that which gives it its vitality. It is better to adopt that construction, which, although limiting the scope of the claim, secures to the inventor all that he actually invented and no more than to adopt one which would render the patent invalid, or one which, being broader than the invention of the patentee, should be a barrier in the way of future progress in discovery and invention.

Bill dismissed.

Composition of Sozodont, Etc.—In Germany, E. Hahn has published in book form the ingredients of over eleven hundred patent medicine preparations; the analyses of which were made by Drs. Hager, Wittstein, Rose, Chandler and others. According to these tests the reddish liquid of Sozodont contains a solution of 5 grammes of oil soap in 6 grammes of glycerine, 30 grammes of spirits, 20 grammes of water, perfumed with a few drops of oil of peppermint, oil of cloves, oil of cinnamon, and oil of anise, and colored with cochineal. The powder of Sozodont is a mixture of corbonate of lime, magnesia, and orris root.

Horn's Liton, which professes to be an infallible cure for toothache, contains: 5 parts of phosphate of lithia dissolved in 400 parts of alcohol.

NOTES FROM PRACTICE.

Abscess of Antrum.—W. P. called to have his teeth examined. Upon examination it was found that the first superior left molar was abscessed, and discharged into the antrum, and that the outer plate of the superior maxilla had absorbed, letting pus through the cheek. The opening in the bone was about half an inch below, and a little to the left of the infraorbital foramen. Upon inquiry I ascertained from the patient that it had been discharging for a year or more. With the consent of the patient the tooth was extracted, the antrum treated through the opening made by the extraction of the tooth—and the opening on the cheek healed up very prettily in three or four weeks.

Shortly before this opening appeared on the cheek, the young man received a blow on the same cheek with a base ball. After the opening appeared he consulted his physician, who introduced a probe into the antrum through the opening on the cheek and pronounced it a case of necrosis of the superior maxillary and sent the young man to a surgeon in Philadelphia, to have it operated on. The surgeon declined to interfere, saying that it would get well without an operation.

I think they both made a mistake in their diagnosis, and furthermore that the blow received from the ball had little or nothing to do with the abscess.—J. O. H.

A Question of Articulation.—What is the best method of articulating a double set of teeth, so as to be of the most service and comfort to the wearer :

Say whether the buccal surfaces of the molars should come even, or should that surface of the superior teeth overlap the same surface of the inferior teeth. Have had some trouble recently where the buccal surfaces were even. Any hint that will be of service to the patient will be thankfully received.

ANSWER.—Double cases are not difficult to articulate correctly if care is taken that the plates on which the bite is taken are well fitted and are of such material as will not change its shape. Wax plates are bad on this account; and gutta-percha, though ordinarily used, is not sufficiently inflexible. The modeling composition of S. S. White's is the best substance for this purpose. It is easily moulded, and is not softened by the heat of the mouth; with it the ridges are easily built up to the required shape and length, and a thin layer of soft wax on the surface serves to unite the two plates after their accurate adjustment Difficulty is often experienced in double sets from the fact that the width of the lower jaw at the posterior part of the plate is greater than that of the upper, *i. e.* from one heel of the plate to the other. It is better here to leave the lower teeth in rather than the upper ones out.

If difficulty is experienced on account of the cheek being caught and bitten between the last molars, it is well to leave these off; this will also prevent the disagreeable rattling of the teeth together which is so annoying to the wearer and his or her associates. It is well to be cautious of carrying the plate back too far; the opposite error is more safe.

Removing Salivary Calculus from Sub-lingual Gland—A gentleman about 40 years of age. applied to me,—stating he had been suffering with a painful swelling under the tongue for several weeks, and therefore was unable to eat solid food. He said he had "applied to several physicians for treatment, without getting any relief, and he wished me to examine his mouth, and tell him what I thought was the trouble." Upon examination of the swelling, I found to the right of the frænum of the tongue, the swelling more prominent, and sensitive to touch. I took a keen sharp pointed bistoury and cut down to the calculus and felt the grating of it under the point of the instrument I then told him what it was, and that it was the cause of the trouble. He seemed surprised and incredulous, that a stone should form there. I prevailed on him to let me cut an opening large enough to let it out, which I did, and found the concretion the size of a navy bean of a yellowish white color; he expressed himself the most grateful individual I ever saw, and said he was free from pain immediately on its removal. This is the second case I have had, and only ones I ever saw. The first case was a much older, and corpulent subject, and the concretion removed from that case, was the size of a hazel nut.

MONTHLY SUMMARY.

Status of English Dentistry.—The following epitome of the status of English Dentistry, is given by the *Lancet.* Dividing the profession into two classes, the "Dental Surgeons" and the "Dentists," the writer says:

"The dental surgeons, as a body desire to elevate their profession, and to keep it at as high a position as possible, to claim for it the same rank and the same educational requirements as ophthalmic, orthopædic, or aural surgery; and, while accepting and fully recognizing the value of licentiateship, aspire to and encourage full surgical culture and diploma. On the other hand, the dentists consider the L. D. S., a sufficient and the only desirable qualification, (though a large proportion of their party have not even taken this modicum of title,) and indirectly discourage the membership or fellowship of the College, and to support which doctrine they now seek to obtain from the Legislature a separate registration, to be shielded beneath the pages of the Medical Register under a new act which they have sketched out."

Simple Method of Testing the Purity of Chloroform.—Dr. Lueke, of Strasbourg, gives the following simple method of testing the purity of chloroform: Immerse a small piece of thin white blotting-paper into the chloroform, and then let it dry in the air. As soon as all the chloroform has evaporated, the paper will not present the least smell if the chloroform is pure. If there is any acid smell perceptible, it indicates the presence of butyric acid in the chloroform, and as a rule has the strong characteristic odor of that substance.—*New Remedies.*

Lionel S. Beale.—The *Chemist and Druggist.* calls Dr. Lionel S. Beale, "one of the few scientific men whose faith is broader than the revelations of his microscope."

Death from Transfusion.—A man died in Liverpool, England lately, from having had his blood transfused into another man who was ill. He went on all well for a day or two afterwards. He then became ill, got gradually weaker and died from erysipelas. The deceased was a man of full habit, and was occasionally given to drinking. The surgeon who performed the operation, before doing so, made particular inquiries from the deceased as to his habits and state of health, and his answers were satisfactory. At the inquest medical evidence was to the effect that the operation had been skillfully performed. The jury returned a verdict of "death by misadventure," but they were also of opinion that sufficient inquiry was not made by the medical men who made the operation as to the deceased's habits and physical condition, and that he was not sufficiently cautioned as to the risk he was running.—*Druggists Circular.*

External Use of Chloral Hydrate—A writer in the *Canada Medical Record* recommends a solution of chloral hydrate in water, from three to five grains to the ounce, as a substitute for carbolic acid for external use. Its effect on ulcers is prompt and admirable, and a case of eczema was successfully treated by it. In cases of amputation, where the surfaces took on unhealthy action, the solution changed their character and removed the difficulty in twenty-four hours. It removes fetor, is clean and neat, does not stain, stimulates granulations without destroying them.

Chloral hydrate has also been used in Germany as an antiseptic application in cancer of uterus. A strong solution—one part to twelve of water—is applied by means of cotton. Dr. Goodell of Philadelphia, also speaks highly of it as a purifying and deodorizing agent.

American Medical Diplomas Abroad.—It would appear that our English cousins are never to learn what constitutes a true medical diploma in this country. The name American diploma is so constantly associated in their minds with the bogus certificates which are sold by *quasi* institutions here, that it is difficult for them to understand that we have any other legal guarantees for medical education. The facts of this abominable traffic have been brought to the notice of the profession across the water time and time again, and it should be pretty generally understood that the quacks who settle in London, and who claim to be "American" physicians, are no more recognized here than they are there. The profession here has done its best to check the bogus diploma trade, and to a certain extent it has succeeded. It should not be held accountable for what it cannot control; and further, it is hardly fair to class what are really well-educated medical men here with a class whom even our English brethren acknowledge as transparent frauds.

Every little while a new case comes into the London courts under the sensational caption of "Another American Physician in Trouble," and we read the account to find that a "Dr." Hamilton or "Dr." Jones has been guilty of unlawful conduct in assuming a spurious title, etc., etc.; and then, in the course of the comments upon the value of American diplomas and the laxity of requirements for a medical degree, the usually absurd questions are asked if there be such a recognized medical school in the United States as the Metropolitan Medical College, the School of Medicine of New York, the Medical University of Philadelphia, *et id omne genus.* We protest that we have had enough of this, and think it about time that our critics should inform themselves of the true state of medical affairs in this country before indulging in further remarks—*Med. Record.*

The Dangers of Ether.—It has always seemed to us the height of folly to declare there could be no danger in any anæsthetic. The lesson taught by the late death from nitrous oxide has, it is to be hoped, been well learned, and we shall in future hear less of the absolute safety of any agent capable of depriving a person of all sensation. Some cases in which ether has been followed by alarming symptoms have lately been recorded. They have been termed syncope, but the word is not appropriate, as the heart continued to beat after respiration ceased. This is what should have been anticipated. When death is produced by ether the animal's heart continues to beat long after the arrest of respiration. The pulse is quickened by ether and maintains its force through a long state of anæsthesia. In these facts lies the safety of ether. But it should never be forgotten that there is danger at a certain state, and the danger is from the side of the respiration, which at length ceases. Stertorous breathing proceeds from paresis of the muscles of the palate, and should lead to the ether being suspended. So respiration growing more and more shallow and less frequent is a warning, and should not be overlooked. It is very rare that the heart fails—perhaps never. Pallor is rare, too, and should excite attention if it occur. But, we repeat, the danger of ether is from the side of respiration, that of chloroform from the heart and this fact goes far to explain their relative safety. In chloroform narcosis the danger is much more sudden. Ether gives warning.—*The Doctor.*

Making Rubber Stamps.—Have a vulcanizing apparatus with a thermometer and a lamp under it, such as dentists use; have an iron printing frame in which you lock up the type for all the names which you wish to reproduce in rubber and of such a size that the plaster mold made from it can be placed inside the vulcanizer. This mold is made like an ordinary stereotype mold, by first oiling the type and then pouring the plaster over it; when set, take it off carefully, and do not let it dry but proceed at once by placing on top of the mold a piece of sheet rubber [not pure rubber, as this is too sticky, but vulcanized, and mingled with sulphur soap stone.] Then have two iron plates, one for placing on top of the sheet-rubber and one below the plaster mold, and which by proper screws can be pressed together and squeeze the rubber on the mold. Back up the rubber with few sheets of paper, so as to prevent it from sticking at the back of the iron plate. After screwing down sufficiently, immerse the mold and rubber in the water in the vulcanizer, screw the cap on, and heat to 300° Fah., then let it cool, open the vulcanizer, take out the mold and rubber, and remove the rubber carefully. This will be easily done if you have put the mold, while still wet, in the vulcanizer. Cut up the rubber so as to separate the various names, glue them to handles, and your rubber hand-stamps are ready. This is the regular method, and if you are not satisfied with the impression given, it is the fault of the manipulation. We have such stamps, which give as clear an impression as can possibly be desired—as clear as metal type. But in printing with it you must apply a slight pressure only; the best rubber type can be made to give bad impressions by defective inking and rough manipulation in printing.—*Manufacturer and Builder.*

Chloral in Tetanus.—At a late meeting of the Paris surgical Society, M. Gueniot read a report on a case communicated by M. Ganiez. The cause of the tetanic attack in this case was rare as the disease became developed twenty-two days after an amputation of the breast. Large doses of chloral, twenty-five grammes (seven-eighths of an ounce,) were given every twenty-four hours. On the fourth day the effect was so manifest that a speedy cure was anticipated; but the patient was not perfectly well before five weeks. About three and a half ounces of chloral were given altogether.—*Med. Examiner.*

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ARTICLE I.

A Plea for Life Assurance.

Read before the Virginia State Dental Association at its Annual Meeting in Richmond, December 11th, 1877.

Why it is so, is a matter not properly within the scope of this paper to discuss, but all who read this will agree with me in the statement that dentists save but a small percentage of their gross earnings, compared with most other professions or occupations. The number of those who die—and we are a short-lived class, dropping into early graves often, and rarely prolonging life to old age—possessed of even moderate fortunes to bequeath to those who come after them, is very small; while the far greater proportion either accumulate little, or make only a comfortable living, or, worse still become, as sight and nerves fail, absolutely poor. It would seem as though we ought, with fair fees and a moderate practice, to accumulate something of a competency, for the conviction which obtains almost universally among our patients that the dentists handle a great deal of money, must have some foundation in fact. Dr. Robert Arthur, in his cleverly written and as yet unanswered book on "Decay of the Teeth," in giving a summary of the present status of dentistry, shows why it is not likely that the honest practitioner is likely to do well financially; but our patients seem to feel in these hard times, as they pay the bills, that they are, to use the words of a medical friend of mine, "swingeing bills" indeed. But for all that, somehow or other the fees, though seemingly fair in the aggregate, do not amount to much by the time the butcher and baker, the landlord, &c., are paid, and the depot man is settled with for the foil and other necessary means of life and of work. However much we may be sanguine in youth of reaping a rich harvest out of so apparently promising a field as dentistry, most of us who have reached middle life lose the vividness of that dream of fortune which was so entrancing in earlier days, and many realize that a competency, or a comfortable living, is all they may reasonably hope for.

Yet the desire to do something by which our little ones may be in some measure provided for when we cease to be, is among the strongest and the noblest of our impulses; for who wishes to leave his posterity to battle with adversity in a selfish world, unprovided with almost the only thing the world recognises as strong for defence! We feel the burden of this as the gravest and at the same time one of the sweetest of the cares that engross us, that when the hands that are now toiling are folded in death and their restless endeavor forever stilled, we shall by their toil leave behind that which shall place our dear ones beyond pinching want or mendicancy.

And thus it comes that almost all of us are holding policies in some one or the other of the numerous Life Assurance Companies which are established all over our land, and whose agents and representatives are found in almost every corner of the country, urging the claims of their respective rival corporations. And this is almost the only hope of thousands now, and this list includes many dentists in these truly hard times, when we feel that we cannot push our patients with big bills, and *must* work at what they call "reasonable figures,"—we put our surplus cash in some such investment, with the noble purpose in view of insuring our lives for the benefit of our wives and offspring.

I am sure that for a long time no institutions attained such popularity as Life Assurance Companies. It seems so simple a matter, the calculations so readily made, the conclusions so reliable, that few men who were approached on the subject had the hardihood to question the statements as to the certainty of the profits sure to arise from such investments. And so they became, as I said, the most amazingly popular of institutions; and I well remember with what a sense of pride I invested almost my first earnings—certainly my first surplus ones—in a policy, the company issuing which was represented, and I doubt not innocently enough by the gentleman who was its efficient agent, and a personal friend of mine, as "Safe Sir! perfectly safe I assure you." And I will recall how comfortable I felt that my wife (there were no children then) was to get the $5,000 in case of my unlucky decease. But alas! after paying into the hands of this treacherous corporation some six or seven hundred dollars, my magnificient company collapsed, and the pretentious piece of parchment they issued as a policy, proved as worthless on my hands as the confederate notes they used to pay us poor soldiers in the land and days of "Dixie."

I doubt if there is a man outside of the ring of the managers of these companies themselves, now holding a policy of life assurance who feels perfectly safe, the record of failures is so startling. I have the authority of a prominent Insurance Journal for the statement that no less than fifteen of these institutions in the United States are now in the hands of receivers; and we all know what that means, for who ever got anything from a receiver? Failure after failure has occurred, until the confidence of the public in such institutions is utterly shaken, and indeed it may well be. A late writer quoting the aphorism that "figures can't lie," adds that "notwithstanding this inability on the part of the integers, they are nevertheless the most active and nimble little liars in existence;" and I may add to this that one need only to listen to the figures quoted by a life assurance agent to feel that the ability of the figures to be manipulated is immense indeed.

I have before me a pamphlet containing statistics of the Life Assurance Companies that have been and are still in existence in this country, and the list is a startling one indeed as evidence of the utter want of stability in institutions and corporations, the representatives of which would lead us to believe are the most stable and safe of all deposits for money. The total number of companies that have existed in the United States since life assurance was instituted, is 205. The total number of failures of these companies is 144. Sixty nine per cent. of the whole number have failed!

The average age of these companies is 10 years. Of the solvent companies, their average age is 17 years; of the bankrupt companies 6 years. The bankrupt companies had liabilities of nearly forty-seven millions of dollars.

A man more familiar with the subject under discussion than any other probably in the United States, says in this connection:

"It is a startling fact that, in round numbers, nine policies lapse by forfeiture and surrender when one is terminated by death; also that the average duration or lifetime of a policy is about seven years only."

And it is worth while to state that it is probable that about thirty-five millions of dollars are paid annually in this country for life assurance, while according to the above authority, only one-tenth of this sum is paid out to policy holders.

But I must not weary you with these details, or burden you with statistics. Enough is said to show that the methods of life assurance as managed in this country are radically defective, and that hereafter the prudent man will hesitate before trusting to such precarious means of leaving an inheritance to his family.

I may be allowed here the relation of a personal incident in connection with this subject which is so illustrative of the fatal defects of the whole system as to be worth placing on record. Sitting only a few days ago in the back office of one of the most popular and (so considered) safest of these companies, I was entertained whilst waiting for the return of the manager, by one of the persons interested in the office management with a relation of some of the economical ways in which the affairs of the company were conducted. He cited the fact that the laws of the State of Virginia compelled a company organized outside of the State to make a deposit with the State Treasurer of $50,000, as a security to policy holders in that State; and chuckled over the fact that they had for $12,000, purchased Virginia State bonds, representing the sum required by law, and deposited these. In other words the security the citizens of Virginia have against fraud is not $50,000, but $12,000. You will see by this how nominal is the forfeiture in case the affairs of the company are badly managed, or more properly, rascally managed, for that is indeed rascality which would disappoint the hopes of the widow and orphan. However, the late action of a righteous judge in New York, in sentencing one of these gentlemen to the State's prison for five years for swearing to a false statement of the condition of his company, may have some influence in the right direction. Still, in Virginia no such redress could be had in the case of companies located outside of the State.

And yet we feel that some means ought to be devised—at least we would cordially hail some means, less costly in outlay, and more thoroughly mutual, and safer than those whose sole aim seems self-aggrandisement, and I am sure that a scheme which has proven safe and cheap would be welcomed.

I call your attention to such a method of Life Assurance —a plan in such successful operation as to make it no longer an unsolved problem. In the city of Washington, (I take this location because rather more familiar to us all) exists an organization called the "Masonic Mutual Relief Association of the District of Columbia." In this society are admitted masons in good standing, who can pass an examination by the physician appointed for the purpose. The initiation fee is small, I think only $2. On the death of any member of the society an assessment is made of one dollar and ten cents on each survivor, the dollar being paid by the proper officer over to the family of the deceased, the smaller sum going to defray current expenses. Any member failing to pay the assessment, is, after suitable notice, dropped from the rolls.

This is in brief the plan of relief, and its working is so admirable as to prove it a solid success. One year from its organization the society numbered 170 members; in another year it had increased to 351. At present it numbers about 1500, which is the limit of its charter. In these nine years the society has paid out about $155,000. Last year it paid out about $33,000, and received about $34,000, the aim being not to accumulate a large surplus fund, only about $5,500 having gathered so far. It has lost by non-payment of assessments about $4,000.

There are similar Masonic Associations all over the country, charging an initiation fee of from $2 to $10, with graded rates for the various ages of the applicants. You are probably, some of you, familiar with a similar organization in existence among the Episcopal Clergymen of your State, the members paying a regular assessment on the death of a member. It is a deservedly popular institution.

Now, in view of the fact that our faith in the popular methods of Life Assurance is so shaken of late: in consequence of the facts given above of this untrustworthiness, and in view of the success of this plan of Mutual Associations as seen among the Masonic fraternity, and others, could not such an organization be perfected among the Dentists, and thus make the members of our profession not only more mutually interested in each other, but be the means of support to our children in the event of our death? Some simple plan of assessment, with an incorporated association, and a bonded treasurer, (and a very little simple machinery would answer,) and thus be the means of relieving our minds of the anxiety and distress which must be ours in the contemplation of the uncertainty of our being able to leave material wealth behind us.

What I propose is that an association be formed, called the "Mutual Relief Association of Alumni of the Baltimore College of Dental Surgery," understanding of course that it is open to alumni of all colleges, and to all dentists in good standing, who can pass a medical examination, such as he would be subjected to by the rules of any ordinary assurance company. I have not perfected nor indeed outlined any plan for this organization, but only present the idea and ask for hints and suggestions, and your cordial co operation. As fellow-workers in a common cause, we should feel a common sympathy in all that pertains to each other's welfare; we should be interested that the wants of one are the wants of all, and that some system of mutual help and protection should be established among us. Why, I know not, but there seems to be too much of a repelling element among us, as though we were similarly electrified; there is too little of fraternal intercourse, too little of harmony, of *esprit de corps* even, and I cannot help feeling that an organization having for its aim mutual relief in that great calamity which must come to all, should be entitled to cordial appreciation and approval.

A committee was appointed at the last Annual Meeting of the Alumni Association of the Baltimore College of Dental Surgery in March last, to whom was committed the elaboration of a plan of Life Assurance for the use of this Association. It will report at the next meeting of the Association, when I trust that it will be seen that the Dental Profession is not slow to appreciate the advantages of such mutual organizations, and that from every quarter the names will come in for membership.

JAMES B. HODGKIN.

ARTICLE II.

Annual Meeting of the Virginia State Dental Association.

[Reported for this Journal by Prof. J. B. Hodgkin.]

The Eighth Annual Meeting of the Virginia State Dental Association was convened in Richmond, Va., Dec. 11th, the President, Dr. W. W. H. Thackston, in the chair.

Quite a number of dentists from various parts of the State were present. The first few hours of the session were consumed in routine business, and the Association adjourned until the next day at 10 A. M.

SECOND DAY—MORNING.

The Association was called to order by the President, and after the usual routine business, the names of Drs. Wm. Farmer, of Wytheville, N. M. Burkholder, of Harrisonburg, D. N. Rust, of Alexandria, J. O. Hodgkin, of Warrenton, and R. Y. Henly, of King and Queen County, were reported for membership and these gentlemen were elected.

Dr. Keesee read a letter from Dr. H. M. Grant, of Va., regretting his inability to attend, and assuring the Association of his cordial sympathy with its aims.

The President of the Association, Dr. Thackston, then read his Annual Address, which will be published in the next number of this Journal.

At the conclusion of the address, which was listened to with deep attention and loudly applauded, Dr. Steele, of Richmond, said that for one he was thankful to the President for making the able and eloquent address on this subject. It chimed in with his own feelings and thoughts. Why could not the dental profession be protected in Virginia, as well as in other States from the tramps and charlatans which infest it? He trusted that a way would be opened by which a remedy would be found for the evils so graphically described in the address, and he hoped that some means would soon be found of protection against the ignorant pretenders who had been run out of their own

State by the wholesome legislative enactments which there protected the dentists. He moved the acceptance of the report, with the thanks of the Association to Dr. Thackston, and that a committee be appointed to inquire into the expediency of memorializing the State Legislature for the protection of the Dentists of this State. The subject was, after further discussion, referred to a committee consisting of Drs. Steele, Henkle, Thompson and Moore.

The Executive Committee reported through Dr. L. M. Cowardin, that they had made arrangements for clinics, in case any member should desire to operate, and that they had also made suitable arrangements for the reception and accommodation of visitors.

On the subject of Operative Dentistry, Dr. Thompson stated that had not had opportunity of conferring with the other members of that committee, and so had no formal concerted report. He read a brief paper he had hastily prepared, in lieu of anything more formal. [Will be published in Feb. number of Journal.]

The subject of Operative Dentistry being now open for discussion:

Dr. Johnston, of Staunton, stated that as to sensitive dentine, he had long ago ceased to use any of the many things recommended as obtunders of sensibility. He had found that moral courage and sharp instruments did more than anything else to overcome these difficulties. The confidence of our patients was a great help also. If they had faith in us and our methods of work, it greatly enabled them to bear pain.

Dr. Keesce spoke of the subject of Nervous Exhaustion, which was one of the topics treated of in the paper of Dr. Thompson. He was told by a friend of his that he had found benefit by insulating himself from his patients by the use of a silk garment.

Prof. Hodgkin thought there was a mistake usually made as to the nature of the trouble spoken of. If members would agree to call it " brain worry," it would be more properly defined. The fact that some patients exhausted us more than others, arose he thought, from the fact that they gave us more trouble, more anxiety and uneasiness; we found them difficult to operate for, nervous and suffering themselves, and we had trouble in all the steps of our work. The condition of the patient presented obstacles in the way of the easy performance of the, under any circumstances, difficult operation, and we had the condition known as "*brain worry*" brought on. *Brain work* was not nearly so exhaustive, and more easily recovered from ; *brain worry* is debilitating.

Dr. Johnston replied, that this was doubtless a solution of the difficulty, at least in many cases.

In further discussing the paper, he spoke of the trouble he had formerly experienced in filling nerve canals, and he had lately been indebted to Dr. Moore, of Richmond, for a method of filling roots of teeth, which was, in his hands, giving a greater amount of satisfaction than any method he had ever seen pursued, very greatly lessening the labor and uncertainty of root filling. The method was to make an instrument of block tin, about the size and length of an ordinary excavator, and shape the end of this to the canal approximately. This part fitting the root, was made rough by a coarse file, and pushed up into the canal. The friction of the walls of the pulp canal against the tin made it somewhat smooth at the points at which it fitted most tightly, and on withdrawing it, this fact was taken advantage of to lessen its size, and by a few trials the tapering tin broach could be accurately fitted to the entire length of the root. It was now marked the proper length and cut off, and a very little of the point or upper extremity also cut off, and on being placed in position could be driven into the canal, with a slight stroke of the mallet. He never enlarged a nerve canal, but by this method of adjustment, found the work of filling roots so simplified as to reduce the trouble to a minimum.

Dr. Henkle said that he had tried this method of filling roots, and corroborated all that Dr. Johnston had said as to ts efficiency and simplicity. It was, of all the plans he had tried—and he had tried very many—the most practicable.

Dr. Keesee wished to know, if this was a better method than to fill with Hill's stopping?

Dr. Moore replied, that he had practised this method of filling roots for seven years, and had experimented largely on teeth out of the mouth, with gold and tin and other methods. He had found on cutting down to the filling, that the root was more perfectly filled this way than any other he had seen. This method had the great additional advantage that the filling could be easily removed, in case it was desirable or necessary to do so. He adverted to the nervous exhaustion experienced in working for some patients, but did not think the explanation of Prof. Hodgkin a sufficient one. He had found himself as thoroughly used up by quiet patients, with simple work, as by the more restless ones, with difficult cavities. Many patients gave him no trouble, while others with no worse teeth to fill, seemed to take away all his vitality. He was willing to admit, however, that brain worry had a great deal to do with the breaking down of the constitutions of a great many of the members of our profession.

Dr. Cowardin discussed the subject of Sensitive Dentine, to which allusion was made in Dr. Thompson's paper. In his own case while at college, his front teeth which required filling, were so exquisitely sensitive as almost to throw him into convulsions. All remedies having failed, recourse was had to the rhigoline spray, which was used with great satisfaction indeed, as an obtunder. Since that time he had frequently used the spray apparatus in his practice, for the like purpose with similarly satisfactory results. He said in answer to a question, that his teeth were sensitive for a long time to changes of temperature, as might be expected, but that this gradually wore away, and now they were very comfortable. The lowering of the temperature was not pushed to the point of danger, but only sufficiently to render bearable an otherwise unendurable pain.

Dr. Thompson corroborated Dr. Cowardin in his remarks on the beneficial use of the spray, so far as sensitive dentine was concerned.

He added that he had laid aside its use in extracting, finding it inefficient. He was much interested in some experiments on what was termed Atmospheric Anæsthesia, or partial anæsthesia produced by rapid and forcible inhalation of air, and would like to know if it had been tried by the profession, and with what results. For himself he had secured results this way, which were certainly very extraordinary, and had performed operations by the aid of this method, which he could not he thought, have performed without some help of this sort.

Dr. Scribner said, that he apprehended the true solution of the effect here produced was in the distraction of the attention of the patient. Whatever would do this would help greatly. Where attention was concentrated on any one point, to that point there was nervous flow.

Dr. Henkle said that Dr. Bonwill was the first to suggest this method. He himself had tried it with favorable results. The question of diversion of the attention however had weight. The simple use on the part of the patient, of a saliva pump, often seemed to answer this purpose.

Dr. Sprenkel had found that perfect dryness helped greatly. By the rubber dam and a current of hot air, he succeeded in managing most of his cases.

Dr. Moore thought that the health of the dentist was often injured, by a fact that we all recognised—all our work was troublesome, and to honestly perform it, it involved an amount of care and anxiety which was trying on the constitution. He had tried carbolic acid and glycerine as an obtunder with favorable results.

[TO BE CONTINUED.]

ARTICLE III.

New Treatment of Plaster Casts.

In response to the offer of a prize by the Prussian Government for a method of so treating plaster casts as that they may be washed, and at the same time that the pores of the material shall be so closed as to prevent the entrance of dirt, Dr. Ressig gives two different processes whereby the plaster is transformed into a combination, insoluble not only in water, but in soap suds.

The first method is based on the fact that sulphate of lime is changed by baryta water into sulphate of baryta, a caustic lime gradually transformed by the action of the atmosphere into a carbonate of lime, as we know from the similar action of plaster and mortar. Baryta water is prepared by slacking together in a securely corked bottle one part of crystallized hydrate of baryta with about twenty parts of rain water, thus forming a saturated solution. After it has cleared, it is sponged or poured over the plaster as long as the cast will absorb it. The cast is then dried moderately and more baryta water applied, if it still takes it in. This treatment, besides hardening the cast, gives it a beautifully white and clear appearance.

The other method is by using a silicate of potash. To obtain this, water containing about ten per cent. of caustic potash is heated to 212° F., and to this is added as much silicic acid as the potash solution will dissolve. Some clay and silicate of potash are precipitated on its cooling. Preserve this liquid in tightly stopped bottles until no signs of turbidity are seen. When about to use it, throw in a small piece of potash—one or two per cent. The solution is applied by dipping the cast, or by applying the liquid with a sponge or spray. An almost instantaneous change occurs, when the superfluous solution should be carefully washed off with soap-suds. Some practice is necessary to determine the time of exposure by this last method.

Casts thus treated are no longer, so far as their surfaces are concerned, plaster, and are very hard and durable. They are still however porous, and absorb dirt. To close the pores, dissolve one part of castile soap in ten parts of alcohol, and wash the cast with this, which will close the pores. A better way, though more expensive, is to dissolve steatite of sodium in pure spirits of wine, and warm the cast before applying. This gives an almost vitreous appearance to the cast, and produces an exceedingly beautiful appearance. J. B. H.

ARTICLE IV.

Clinical Lecture on Nervousness in the Male.

BY S. WEIR MITCHELL, M. D.,

Physician to the Philadelphia Infirmary for Nervous Diseases.

Many years ago, when we first began to sum up and classify the cases which came to my clinic, at the Infirmary for Diseases of the Nervous System, my assistants called my attention to the large number set down as general nervousness; and I then saw, with some surprise, that so very many of these were men. This was the more notable, because of course the persons who seek help at the Infirmary are mechanics and workingmen chiefly, and therefore hardly such as are presumed to suffer from nervousness.

Under more exact study, by means of referring the cases back to their causes, the number labelled general nervousness has been somewhat lessened, but in each year's report still appears a group in which either general nervousness is the dominant condition, or which at all events I find myself unable to classify under any other heading.

We rarely see this condition delineated in the books. You may read whole text books about nervous diseases, and see no mention of this striking, this annoying, this disabling condition ; or, if spoken of at all, it is as if it were entirely the sad prerogative of woman. We may find it useful, therefore, to look back over some of our cases to see how they originate, what precisely are their symptoms, and to what extent and in what manner we have power to relieve them.

In so doing I do not desire to be considered as wishing to make of general nervousness a disease. Yet does it sometimes present itself here and elsewhere, with so little apparent relation to casual conditions, and with so distinct a group of clinical peculiarities that it is at times hard to do otherwise than so to treat it. For the most part it is the offspring of obvious defects in the nutritive supply, and is plainly related to coincident or precedent changes in the nervous or vascular systems. Sometimes too it is ephemeral, sometimes it is only too lasting, and in a few cases it is due to original defects, and arising at birth is carried to the grave.

As concerns many other symptoms, so also of this. It does not answer to accept the statement of the patient that he is nervous; we want also to know what he means by nervousness; and this brings me to the definition of the term. Perhaps a couple of illustrations may aid us in this study. The first I shall offer is a very good example of a somewhat rare cause of this state, and is a type of the complex symptom or disorder as perfect as we can desire.

C. J., æt. 28, about 5 feet 10 inches high, and weighing 135 lbs., tells me this story: At the age of eighteen he was well, active, and of rather cool and quiet temperament; not in the least a nervous lad. At this time he began to learn segar making, and has been at the trade until a year ago, when he gave it up. He has been in all ways temperate, and curiously enough has not learned to smoke or chew. This trade has, however, been, in my opinion, disastrous to his nervous system, and this is not an exceptional case, as I have seen others who had been in like manner injured by the same occupation. By slow degrees, but more and more each year, this young man has developed a nervous constitution, which he attributes to the work he did, a conclusion in which I fully agree. At last it drove him from the trade and now he is here for relief. Let us look at the range of symptoms he presents.

He is sallow, and inclines to anæmia. His appetite is fair, his digestion uncertain, good to day, bad to-morrow; his bowels much like his digestion. I can detect no renal or intestinal disease, and he has never had ague or syphilis. His circulation is poor; his heart feeble; it beats when he is lying down 85, and rises abruptly to 100 when he stands up. A sudden sound, a slight scare, an unlooked for visitor, gives him palpitation of the heart, sense of throbbing in the limbs, and coldness of hands and feet, with local sweats.

He has become emotional also, and gives way readily to grief, or to mirth. He sleeps ill, dreams much, and is liable like a child to night terrors. As to exercise he can work as well as ever, but thinks he tires more than he should do; and he adds finally, I used to be brave as any body, but now I am afraid of everything. Since he gave up segar making he has been slowly gaining ground, under the use of a variety of tonics.

As a second illustration I turn to my note-books kept during our late civil war.

C. J., æt. 30, a large, vigorous man, was one of the leaders of the gallant storming party which took Fort Fisher. He had, before this, led a life of adventure and danger. Probably it would have been hard to find a more cool, quiet resolute soldier. He was shot through the right lung, and the ball emerging, entered the arm, and injured the median nerve. He had a long series of lung troubles, and the terrible anguish of causalgia (burning pain) in the hand, exhausting suppuration, and constant pain, reduced him in three months to a slightly covered skeleton, and transformed him morally into a peevish, timid child. In this condition he was a type of a nervous man. A sudden noise, an unlooked for letter, the morning visit of the doctor, set his heart beating and made his limbs cold. At the prospect of a hypodermic injection he would shed tears, and he became annoyingly susceptible to the irritative influence of sounds and light.

When we come to ask in what general nervousness consists, we shall find, I think, that its prominent peculiarity lies in over-excitability. This is not all of it, but it is a large, perhaps the largest part. The patient is too easily moved, too readily excited. The strong man becomes like the average woman, the woman like the unschooled child, and the symptoms for the most part are not utterly abnormal, but are exaggerations of normal conditions. Many of the characteristics exhibited by the nervous man on the slightest provocation are seen in the normal man at times on rare occasions, under exposure to unusual emotion. A nervous man receives a telegram; he becomes pale, his heart throbs, and he opens the envelope with a trembling hand. It proves to be a message of no moment, but the effects last for an hour. A healthy man might have shown like disturbance under the influence of some sudden announcement of the gravest calamity, while we shall meet with men who under no circumstances show the least outward sign of emotion while in health. The mass of men are naturally free from nervousness, and perhaps the hardening education which the man undergoes is a means of forcing him to repress emotion and to restrain the exhibition of feeling until restraint develops habit. On the other hand, the lonelier lives led by women leave them more free in this respect, and all their training lies too much in the opposite direction to that of men. In either sex early education may do much to restrain acquired or inherited nervousness, while it is quite sure, as I have many times seen, that the most hardy children may be made nervous and emotional by over-indulgence, and by allowing them to grow up without having learned this life's most urgent lesson, that of self-restraint. I have said that the condition I call general nervousness is mainly characterized by a certain readiness to be excited, and it remains to point out the rest of the clinical peculiarities which go to make up a picture which it is perhaps difficult to make sharply definite. With the tendency to be easily moved there is also a certain apprehensiveness which applies both to the possible effects of outside influences, and to the symptoms of the patient himself. What he feels he exaggerates, and he is alarmed by what he feels; knowing also how certain agencies affect him, he dreads them, and thus learns to shun his fellows and so to avoid the incidents which contact with men brings about. Very nervous persons are also apt to suffer from a sense of confusion upon sudden or prolonged use of the mind, and from being in a crowd, or where there are many speakers.

In all such men, anxiety fear, embarrassment, are prone to occasion some disturbances in the sphere of motor activities, which are, to begin with, never, in such cases, quite what they should be. Thus in acquired nervousness, the hand is apt to become tremulous, and under emotion of any kind this may increase, so that, when conscious of being observed, it beomes impossible even to sign the name. Under more violent emotion greater disturbances may occur and the tremors become larger, and even pass into the degree of spasm, local or general. All painful emotion is competent more or less to disturb and enfeeble the normal capacity for movement, and in nervous people emotion becomes doubly capable of weakening the limbs, of affecting the speech, even to inhibition of vocal utterance, and of showing itself in the play of the features.

In some cases, the mental or emotional impression disturbs the vaso-motor system, and we have then spasm or dilatation of vessels, violent arterial throbbing, irregular and excited cardiac action. How the extreme of nervousness acts on the battle-field is well known. Sometimes like annoyance is occasioned in acquired nervousness, and emotion provokes urination or motion of the bowels. I have seen more than one nervous man who on leaving home in the morning would be turned back again and again to make water. Mr. Carpenter has long since called attention to the fact that when we watch our automatic movements, and try to make them voluntary, we at once make them difficult. As in nervous people too much attention is apt to be paid to the processes which go on in the body, we find in them in an exaggerated degree just such difficulties in the act of swallowing, of micturition, and, as I have said above, in those grouped habitual movements, such as writing, which have become almost automatic. Exaggerated states of nervousness give rise in men, as in women, to the motor disturbances, which are said to characterize hysteria, and even to many of the psychical peculiarities of that strange state, although only once have I seen a man exhibit the whole range of these phenomena.

The sleep of men in this condition is rarely good, nearly always they go to sleep with difficulty, dream unpleasant dreams, and wake often or early.

When we come to ask ourselves what is the state of the nerve structures which gives rise to the symptoms described, we are somewhat at a loss. It is easy in a large majority of cases to feel sure that it is, however caused, a state of feeble or tardy nutrition with which we have to deal, that it is in turn associated as usual with an extremely unstable state of circulation in the nerve centres, so that states of congestion at one time, and at another of anæmia from vasal spasms may prevail; but, if we seek beyond obvious clinical conclusions to determine just how the nerve cells are changed, we are forced to pause and admit that the theory of feeble nutritive supply fails to explain many of the cases of sudden nervousness such as those which arise from mental shock. I saw a curious case of this kind some years ago.

A young man, æt. 18, while attending his father's funeral, slipped on the wet ground and fell into the grave. From this time he became strangely nervous, was startled readily, grew timid and apprehensive, and at last became unable to write while any one was watching the act. The tremor thus caused, at last so increased that he had to give up a clerkship which he held. This condition of system came as it were in a moment, and converted a quiet somewhat resolute person into a nervous invalid. I might quote other cases, the one I have given may suffice. This man remained in good physical health, and was thus in contrast with most cases of acquired nervousness, which as I have already said, are at least associated with states of feebleness, if they be not always traceable to these, but although such is distinctly true, the form of trouble causing weakness, innutrition, and anæmia varies, and with its variation the intensity of the nervousness, and even its quality varies. Nor must we lose sight at any time of the character of the patient, for this also must make up a part of the case, and it will be one thing to deal with a case of congenital nervousness made worse by circumstance, and quite another to treat a person at one time firm and cool, and who has merely become nervous through disease or suffering.

It may repay us to run over the causes of nervousness, with such illustrations as our case books afford.

I have mentioned already one case as an illustration of the influence of enfeebling wounds. In like manner we find sometimes extreme cases of nervousness following fevers or exhausting diarrhœas. Every old army surgeon, who recalls the Chickahominy diarrhœas, will recall too the dreadful condition of nervousness to which it reduced many persons.

The connection of general nervousness with neural maladies is also of interest. The victims of general sclerosis, and still more those of paralysis agitans, are apt to suffer horribly from acquired nervousness, while in posterior sclerosis (locomotor ataxy) the patients are often singularly free from nervousness, unless they continue to suffer from the atrocious pain which sometimes continues throughout the whole course of the disease. It is amazing to learn the extent of brain disease which may exist without making the sufferer excitable, timid, tremulous, or in a word nervous. So much may also be said of many cases of brain tumours, and of very many hemiplegias, while affections of the pons and of the sensory tracts, involving heminæsthesia with pain or obscure unilateral sensations of burning are sure to cause horrible nervousness.

How far visceral disease may cause it depends a good deal on the individual, but more on the organ attacked, as we well know. A poet has said "hope springs eternal in the human breast," and certainly, to judge from the psychical peculiarities of pulmonary disease, he was fully justified. On the other hand, the nervousness and depression which accompany disorders of the abdominal viscera are well known, and gave rise to the adage of the Presbyterian divine that "no man dies a triumphant death who dies of disease below the diaphragm."

The genito-urinary tract in man furnishes in disease remarkable illustrations of the extreme of general nervousness. Distressing examples are supplied by some of the many cases of seminal emissions which we see, and sometimes sexual excesses give us equally signal instances.

The worst cases I have seen were those of sexual excess in the young. I was consulted four years ago by a gentleman, aged 27, from Tennessee, who told me, that when a mere lad he cohabited with a girl several years his senior, and the intercourse was kept up without suspicion until the girl had become a teacher, and the lad was himself seventeen years old. At this time he ceased to see her, but the mischief was done. From the age of thirteen, he had become excitable, emotional, and tremulous on the least sudden noise or mental shock. This increased so, that when he left school at seventeen, he began to shun society owing to his want of self-control. He then improved during a year spent in the country, but the work and confinement of a counting house again brought back his old trouble, and he began, after two years, to lose the power to write owing to increasing tremor of the hands; a more distressing case I never saw.

Nervousness is a frequent accompaniment of that form of head trouble, about which there are so many theories, but which is most common in the young, or at the close of middle age. I presume that the term nervous exhaustion is as good a label as any. It does not always lead to great nervousness, but it does do so sometimes, as in this rather curious case, which I saw but lately.

M. L., æt. 58, the leader of the bar in a Western city, was forced some years ago to carry on the trial of a most important case, while his wife lay dangerously ill. From this time he began to find that he felt embarrassed when rising to speak, and that he was obliged to urinate always before speaking in court. The mere knowledge of these facts began to trouble him, and soon after he found that his emotions were less under control than they had been. At last one day when about to sign his name, he found that his hand shook, because two gentlemen who were to act as witnesses were watching him. From this time he could no longer write, when overlooked, unless he made the most earnest effort. With these disabling conditions, he began to fail in vigour and appetite, and to become excessively restless and irritable. Under fortifying treatment with long absence from home he became entirely well.

While epileptics are often quite free from nervousness, frequent attacks of vertigo, whether due to aural disease or to other causes, are almost certain to result in general nervousness of the most distressing kind. Where vertigo occasions the condition which I recently described (***Med. Reporter***, lecture on Vertigo) as the vertiginous status, this is notably the case. In this state frequent onsets of vertigo give rise to a permanent sense of instability, and also to confusion whenever prolonged or intense thought is attempted. This I venture to call mental vertigo.

Tobacco is of all causes the most potent in giving rise to general nervousness. Used in excess, it makes the heart irritable and feeble, produces tremor and insomnia, and may develop even in sturdy people a high type of nervousness. Its potency is singularly well seen in its effects on people by nature nervous, and in the remarkable manner in which it disturbs many ataxic patients, or those who have paralysis agitans.

I have now an ataxic case which well illustrates this peculiarity. The patient has ceased to have pain, and seems for years to have been at a stand still. He has made one of those curious pauses in the disease which flatter the patient with the hope of recovery, and delude too hopeful therapeutists. The patient is excessively fond of tobacco, and despite all that it costs him will now and then venture to try it again. The result is interesting and always the same. He becomes, after two segars, so emotional that noise, a telegram, a letter to be opened unnerve him, and his voice fails if he has to address a stranger. He acquires tremor of the hands, and writing becomes impossible for a day or more.

Here also is a strange example of neurotic states in the male caused by, first, a peculiar constitution, and, secondly, by extreme abuse of tobacco. Had it been a woman's case, no one would have failed to label it hysteria.

P. L. T., æt. 24, a young merchant, belonged to a family, which offered in the last generation two cases of melancholia and one of epilepsy. Mr. T. was the sole remaining representative. He was always a delicate looking man, of nervous temperament, quick, restless, and anxious. At the age of sixteen years he began to chew and to smoke, and used tobacco in both forms to excess—up to his twenty-third year, when I saw him first. I learned then that he had become more and more nervous, and had twice had fits of alternate tears and laughter, seemingly quite uncontrollable. The night I saw him, he had had a fall, from which he did not rise, but called for help, insisted that his thigh was broken, and was at last carried home on an extemporized litter. When I examined him, his right leg was rigid, the leg extended. The spasm lasted for some hours, while I sat and watched him. When it gave way and the legs began to twitch, he had a general convulsion, then a period of apparent insensibility, then a series of such fits, and at last a remarkable condition of general rigidity. The series ended with an enormous flow of thin pale urine.

These phenomena recurred at intervals for two years, and I have over and over witnessed in him nearly the whole range of hysterical symptoms. His last attack began with fits of crying, and ended in hemi-anæsthesia and partial loss of power on the same side.

Mr. L. was made well by giving up tobacco, and by a long course of careful physical training.

Among the most potent causes of general nervousness in man, as in woman, is a state of anæmia. It is probably the immediate cause in some of the cases credited to pain—to exhausting discharges, and to maladies of assimilation, to which I have already alluded, and at all events it is a condition never to be lost sight of in the treatment. A remarkable example is to be found in the case of Mr. L. P——, recorded at page 89 of my little book on *Fat and Blood*, second edition. In this instance the anæmia was remarkable, and the nervousness not less notable.

I have seen children reduced to a state of pitiable nervousness, with feebleness of will and convulsive states not epileptic, owing to unsuspected albuminuria. I am now attending such a case in a lad of the age of thirteen.

I am unwilling to end without some allusion to treatment, but as to this I must be brief.

A large part of the treatment of nervousness must of course, resolve itself into the treatment of anæmia, of defects of nutrition, of mal-assimilation, of dyspepsia. I have said that, in one way or another, poverty of blood is most often the true difficulty. It may be due in turn to this cause or to that, but when these have been cured, or helped, there will yet be left the anæmic state, and in some people, when this exists, it is strangely intractable. On this matter, however, I have nothing to add here to what I have recently said concerning the treatment of obstinate states of anæmia, either with or without loss of flesh. The slighter grades are, of course, to be met in the usual ways familiar to all physicians.

But nervousness, whatever be its parentage, demands something more than this. Only too often the symptoms, which make up this annoying state, continue after we have amended the blood losses, which undoubtedly occasioned them. There is, perhaps, in this fact but another example of the persistency of morbid habits. The man whose self-confidence has once been rudely shaken does not speedily reacquire hardihood in the face of disturbing impressions, and we have also to deal with the many instances of nervousness which arise out of moral causes or are of unknown birth. In the cases of women, we can often aid by secluding them for a time from the kind of troubles which keep up the habit; and with men we may reach the same end by cutting them off from their routine lives, through the help of travel and change of scene. Above all, it is useful to give to such persons the out-door life of field sports; and where these cannot be had, it is often wise to induce the sufferer to undergo some gradual course of physical training, since this has in many cases the happiest results. I have over and over again seen the most helplessly nervous men lose their annoyances under such a plan, but it requires both care and patience, because almost all of the more systematic means of physical training are tiresome, and excite none of the interest which belongs to the exercises of outdoor life. The difficulty vanishes in the presence of ample means. Said a gentleman to me yesterday, "Colorado in summer, and horseback in winter—these are what cured me of nervousness."

The mental attitudes of the nervous man demand of his physician the most careful attention, nor can we afford to disregard anything in his ways of life or his habits of thought and action. We must determine for him how far and how much he shall use his mind; whether or not it is well for him to continue his work, whatever it be, what his amusements should be. The careful student of such cases will find in the individuality of his cases the need for the most minute of such studies, and, above all, he will learn that the more fully he commands the confidence of his patient the more can he effect. Such people are greatly helped by a word or two of decisive promise or of reassurance, and since a part of the treatment of the acquired habit of nervousness must consist in mental and moral training, it becomes needful at times to make the patient comprehend that he himself has some control over his symptoms, or, at least, that constantly to yield to them is to insure defeat, and that constantly to struggle in a manly way is sure to bring nearer the day of perfect self conquest·

But, besides these obvious means, we have some agents, the careful employment of which is of essential value in general nervousness. First among them is the use of water in its varied forms of application, a too much neglected therapeutic aid. We have no water-cures in this country conducted on scientific principles, and by men of experience and intelligence, yet much may be done by the aid of the shower-bath, the douche, and the pack in the patient's own home. Alcohol would also have its use, and, indeed, has its use, but it is so immediate and perfect a relief to many people who are physically nervous, that I for one often fear to use it.

Then come the drugs. There is a form of cardiac and vasal irritability which is found in many nervous people, and which is most distressing. I have now a patient who never receives a guest, or even the best known visitor, without becoming pale, even white to faintness, and without having the most violent palpitations. Another never opens a letter without like symptoms. In such cases full doses of digitalis long kept up, are most valuable, and are in many cases capable of helping to form a habit of insensibility to such influences when once we have succeeded in bringing the nutritive system into perfect condition.

Digitalis has, I think, no power to aid the other symptoms of general nervousness. It helps the vasal and cardiac troubles, but not the tremor nor yet the mental symptoms, the indecision, the shyness, the timidity, the self-consciousness, as chloral does, at least for the time.

Of more general value are both opium and cannabis, but neither ought to be used very long, and when taking them the patient should not know what he is taking, and, above all, they should be used in very small doses, and perhaps I ought to say what I mean by small doses. In such cases I give of morphia 1-20 grain, with 1-20 of cannabis, and a varying amount of aloæ ex. or rhubarb, and if these doses are too strongly felt, I give even a less amount.

Among the general nerve tonics arsenic stands high, but the secret of its use lies in its long continuance. The bromides are also of the utmost utility. Among them I prefer the lithium bromide, which I introduced into medical use some years ago, and which has now stood the test of my own longer experience, as well as that of many French and German therapeutists, who have come to regard it as the most valuable of the bromides. It should be given in some simple bitter for many months, and in doses of not more than five or ten grains, thrice a day. I often use the bromide of lithium and the bromide of arsenic together in solution. The valerianates have also their uses, and I am fond of combining the three valerianates of quinia, zinc, and strychnia in the pill form. I am much more doubtful of the prolonged usefulness of such agents as assafœtida and sumbul, which, however, are often effective to tide over periods of increased nervousness.—*Med. News and Library.*

ARTICLE V.

Essay on Cleft Palates.

Read before the Connecticut Valley Dental Society, at Greenfield, Mass., June 13th, 1877.

BY DR. DAVENPORT, OF NORTH ADAMS.

Mr. President and Gentlemen: Medicine, surgery and dentistry are all based upon anatomy, physiology, pathology and materia medica. Without anatomy, we should not know either the structure of a single tooth, or its connection with the jaw, gums, blood vessels, nerves, etc. Without physiology, we should know neither the natural uses and influences of the several parts just named, nor the relation of the teeth to the whole process of digestion, assimilation and nutrition.

As pathology bears the same relation to organized structures in an imperfect or diseased condition as physiology does to them in the natural condition, so, without a knowledge of it, neither the physician, surgeon or dentist could know anything of the origin, nature and tendencies of the diseases and defects he professes to treat. The materia medica, in its full scope, includes everything that can be made useful in the mitigation or removal of any of the ills to which man is liable.

These four branches of medical study (if no more) are fundamental, and no man can do full justice, practically, to the most limited specialty, without a thorough knowledge of them all.

Every member of this Association will acknowledge that a dentist should certainly understand the composition, structure and mode of development of the teeth, together with the causes that render their development defective, or induce in them disease and decay. A knowledge of these structures, whether chemically, anatomically or microscopically considered, involves a knowledge of the same structures in all other parts of the body. To understand the development of a tooth and its appendages from materials selected from the blood, involves a knowledge of the blood itself, and all the laws that govern the intricate processes of assimilation, nutrition and disintegration in living structures generally. Indeed there is not a living atom of our physical organization so isolated, that a knowledge of its structure, nutrition, disintegration and various morbid conditions can be obtained without developing all the essential facts and principles of anatomy, physiology and pathology.

It is an interesting field for physiological research, to understand every slight physiological act and observe every consequent histological condition, from the first appearance of the tooth gum, to its full and complete development. But this has not been the privilege of any one individual. Sufficient observation, however, has been made to determine the general conditions and the changes which occur duing the germination and growth of these organs.

The questions, then, which are of the most importance for our consideration in this connection, are: What are the causes which produce the abnormal conditions of these organs? Where does all this defective dental tissue which we see come from? And what is *the* remedy?

A very important inquiry connected with this subject is the question, In what sense, and how far, does the mother contribute during gestation to normal or abnormal dental structures; and, in this respect how far may abnormal results be prevented or removed? As maternity is the source and continuance of the nutritive pabulum during uterine gestation, and usually is (or, at least, should be) during the first few months of infantile life, the question arises, May and does not the mental and physical condition of the mother affect detrimentally the fœtal and in fantile aliment, both in regard to its quantity and quality?

If this question has its foundation in physiological truth, do not such indications call most imperatively upon the medical as well as the dental practitioner to furnish to mothers the instruction requisite to the full comprehension and imperative necessity of supplying themselves during this period with sufficient and appropriate nourishment to insure healthy fœtal nutrition? As a defective organization will be produced just in the ratio of a deficiency of those appropriate vegetable and mineral elements which enter into and contribute directly to the formation of fœtal structure, I have long thought that we are too much in the habit of looking on the surface of this subject, and standing with folded arms, and often with closed eyes, while millions upon millions of dental structures have gone down to premature graves.

"An ounce of prevention is worth more than a pound of cure." It was formerly supposed that the dental practitioner must take the dental organs as he finds them, and perform such surgical operations as he may consider best adapted to their preservation and health, entirely ignoring the great truth that it is the paramount of the physician and dentist to prevent disease. My impressions are, that our efforts have been directed more to remedying the effect than to removing the cause of this, I might say, national calamity—to cure rather than the prevention of disease. To find out the real cause of defective dentition and decay, we must consider the fundamental principles and laws of our existence. Physiology teaches us that all vegetable and animal bodies are composed of gases, liquids and solids of various kinds and properties. The body of a man is composed of some sixteen of these different substances, and they are governed by the same natural laws that control them in other forms or bodies. These substances are derived from the air, the earth and the water. Our common articles of food are known as simple and compound alimentary substances, and when taken into the system are converted into blood. The blood *should* contain all the requisite constituents for muscles, fat, bones, etc. But if any of the constituents of which these are formed are wanting in the food, there will be corresponding deterioration in those parts of organs which require them; for the body cannot originate a simple or a compound substance, nor can it appropriate any more of a constituent to an organ than it has received into the system for that purpose; hence the food which is designed to nourish all parts of the body should contain all the constituents of which the body is composed.

The body does not possess the power of converting one elementary substance into another; it can compound and appropriate substances to the various parts of the system, but it cannot originate them. If the mineral element which forms and sustains the hard portion is wanting, those organs will suffer just in proportion to that deficiency. The pot-ter cannot fashion the bowl without the clay, neither can bone be formed without earthy matter. If there be an abundant supply of earthy matter to full meet the demands, then, instead of soft, chalky teeth, as we now have, they will be dense and firm in their teqture, and capable of re resisting decay, so long as a due proportion of mineral supplies are kept up. And under ordinary circumstances they will retain their integrity until their supplies are deminished or suspended. Some physiologists claim that the above is incorrect, and think that with a free use of a vegetable diet and animal food we at all times obtain sufficient nourishment for the dental organs, as well as for the whole bony structure of the body. Though we use white bread, and entirely discard the Graham bread and Graham mush of which there is so much said by a class of modern physiologists, claiming that the amazing amount of physical distress and dental disintegration which is met with on every hand does not occur so much from an insufficiency of bone element in our food, as the inability of our physical powers to make use of what we get. But whether your profession hold to the latter theory or to the former. I am not now so fully prepared to say as I shall be when I hear you comments on this paper. Personally I am inclined to the former, believing that when the food does not contain sufficient mineral matter, that the dental tissues may not only be defective, but we may also have congenital defects of the palate. In support of this it is said that ninety-nine per cent, of the lion cubs born in the Garden of the Zoological Society in Regent's Park, London, have cleft palates, so that they are unable to take nourishment, and consequently soon die. At the Dublin Zoological Gardens, however, there are very few such cases. This difference has been attributed to the difference in the food of the parent lions those in London being fed only on the flesh of large animals, so that they are unable to eat any of the bones; whereas in Dublin a goat twice a week is given them, which they eat bones and all. This provides the bone phosphates needed for the organization of the young animals. Prior to the adoption of this method of feeding at Dublin, malformation of the palate was as common there as it now is at London. This furnishes a fruitful field for thought, and is very suggestive on the subject in hand.

Having spoken of some of the causes which, to my mind, contribute largely to produce defective dentition and cleft palate, and having hinted at the remedy which must be adopted if we would avoid the causes upon hygienic principles which produce these abnormal development, I now propose briefly to speak of the remedy for congenital defects of the palate.

My experience in staphyloraphy has been too limited to enable me to engage your attention for any length of time, The object to be obtained by staphloraphy is to improve the articulation or speech, which is more or less defective in every case.

" Dr. Kingsley says that the closing of the fissure by surgical operation, no matter how skillfully performed, and no matter how perfectly the union is made, he believes to be in almost all cases a failure. The objects for which it is attempted are not abtained. I believe now almost every surgeon of eminence concedes the point, and also gives to the dental practitioner the credit of having proved that this operation is no longer necessary."

When we come to look into the mechanical process of articulation we find it produced by the voice or sound issuing from the glottis, and manipulated by the organs between that point and the lips inclusive, and, to a certain but very limited extent, the nostrils.

The palate, I believe, possesses a more powerful influence over articulation than any other organ, unless it be the tongue, and perhaps nearly or quite as much as that organ; for it is the tongue coming in contact with the palate, working against and articulation with it, thus breaking up the voice, that gives variety. And these sounds come to be understood as language. Now what we are called upon to do, is to supply the loss. I need not refer you to the attempt made in the olden times to fill this fissure by the use of unyielding substances. That subject is more or less familiar to you. The only substance that can be successfully used is elastic rubber. The palate, in order to articulate, must have the power to rise up until the passage to the nares is closed. I am not certion whether that closure is entirely due to the elevation of the palate, or whether, simultaneously, there is a contraction of the pharynx. I think, however, the pharynx meets the palate half way.

Perhaps it might be well for me to state here the reason why I have taken sufficient interest in this subject to bring it before you at this time. It is from the fact that I have for some time past had a patient under my care who has one of the largest fissures of the palate I have ever seen, it being complicated formerly with double hair-lip Consequently the ideas, suggestions and conclusions are all fresh from personal experience and treats made upon the patient, who is now wearing an appliance I made for her during the past winter.

I have found that the natural vela or palate is continually moving up and down, now closing the passage to the mouth, allowing the sound to pass through the nose, again opening and allowing the sound to pass both ways; then closing the passage to the nares, and allowing only a passage through the mouth; again closing the passage to the nares, and, in conjunction with the lips, allowing the sound to accumulate in the mouth, ready for an explosive sound, as in "B," the air accumulating in the mouth until the cavity is full, when, opening the lips, it makes "B" With "P" there is precisely the same action of every other organ, except there is not the accumulation of sound that "B" exhibits. "M" passes entirely through the nose; instead of the air accumulating, it continues to issue from the nose. In this operation the tongue remains quiet; the lips and the palate do the whole. I find by experiment that if the palate is defective so it cannot close the passage to the nares, and the sound issues there instead of accumulating in the mouth to form "B," it must form "M." We must, therefore, in making a substitute for the lost organ, make something that shall close the passage. This is the reason why I have found the operation a difficult one. The artificial palate must be made to accomplish the purpose, and be under the control of the muscles in such a manner that it may be elevated and dispressed by the remnants of the lost velum, and at the same time admit of the contraction of the sides of the fissure, or deglutition will be interfered with.

I found it greatly to my advantage, for the sake of experiment, as well as for convenience, to make my obturator and velum in separate pieces. I also have made several vela for this patient, varying each in some particular, and at the same time testing each, until I find that I am not able to go below the base of the uvula, and, owing to the lack of muscular power in the remnants of the natural velum, and also a weakness in the superior constrictor of the pharynx, I found it necessary, after coming to the base of the uvula, to reflect it back horizontally, so as to be out of the way of the food, and let it terminate in a thin and delicate edge—otherwise it would not close the nares. The posterior border is dropped a little, so that when the pharynx contracts it shall come against a curved edge. This I found necessary in order to produce perfect articulation, and also that it may not irritate the walls of the pharynx.

To make this instrument embrace the sides of the fissure, and at the same time provide for the contraction of the sides of the fissure in deglutition, has caused me great solicitude. I find in actual practice, that while all the edges must be delicate to prevent irritation, all the other parts must be just as firm as they can be made, and at the same time allow of an easy movement of the muscles. Firmness seems necessary, that the tongue, coming against it, may not drive it out of the way, but hold on long enough to get ready for the sound. In the letter "K" the sound is made by the hard, firm pressure of the palate and the tongue in conjunction with each other, the pharynx also acting with them. From all the information I can gather on this subject, I find we cannot look for immediate results in articulation, as all the muscles are trained to speak without the aid of the lost organs. Perfect articulation, then, can only be obtained by long persevering and continued practice. Since this patient has been wearing the appliance, I find a marked improvement in the articulation, and almost an entire absence of that nasal tone which always characterizes cases of this kind. I have found a difficulty with this patient which I do not understand. She does not seem to be able to distinguish the difference in the articulation of her own voice. This seems to be a serious barrier in regard to correcting the speech. Whether this is due to an absence of the Eustachian tubes or from any other cause I am not able to say. I have found, upon examination, that the Eustachian tubes (so far as I can judge) are present. Therefore my conclusion is, that the difficulty alluded to is due to some other cause. All the models of the lost organs I have duplicated in type metal, which I have brought for your examination. This is necessary, in order that the instrument may be duplicated at any time as soon as deterioration commences—this soft rubber being a perishable substance. And, from the experience I have had with soft rubber, we cannot expect the instrument to last more than from three months to a year. Hence the necessity of metal models, that duplicates can be furnished the patient at any time.—*Dental Miscellany.*

ARTICLE VI.

Hand Pressure and Soft Foil, vs. Malleting and Cohesive Foil.

BY J. FOSTER FLAGG, D. D. S.

Recognizing that gold foil is yet the most acceptable material for filling a very large class of cavities of decay in a large proportion of teeth, I desire to place myself upon the side of the utmost possible return to the use of hand-pressure and soft foil, urging this practice from the standpoints of *economy of time*, both to patient and operator, and *durability of filling*, as shown in my experience by the tabulated statistics of fifteen years.

It is now a sufficient length of time since I had wrought with cohesive gold and mallets of various kinds (wooden, leaden and steel,) to have attained that degree of proficiency which, in my estimation warranted a commencement of comparison as to ultimate results.

Since then, and during my experiments, I have used in addition to the hard mallets, several of the automatics (preferring the Snow & Lewis,) the engine mallet, and the "Electric." My experience with the last two forms of mallet has been too limited to be of any value to others besides myself, and their acceptable construction is of too recent date to admit of any reasonably lengthy test for durability of work.

My reason for advocating the practice of hand-pressure and the use of soft foil is the fact that my mallet work of ten years, standing does not compare favorably with my hand work of fifteen and even twenty years, standing—this, of course, in good solid tooth structure—while the mallet work of *five* years' trial, in softer teeth, does not compare favorably with that of the same length of time, and even eight years done by gentle, steady pressure, and with soft foil.

Added to this I have noticed that in a large proportion of the gold *successes* which have been brought to my notice, the patients have each remarked that they remembered thinking that their "head was going to be *pushed* off," while in a large proportion of *failures*, the remark has been depreciatingly made that it "ought to have lasted, for it was *pounded* in hard enough." I have drawn, what I thought, a natural inference.

Accepting, then, the view that much waste of time was concommitant with less serviceable results, I feel it my duty on the score of tooth salvation, to urge upon the younger and less experienced of my professional brethren an indulgence in a large share of hand pressure soft foil, cylinder, pellet rope and ribbon work, at least until *time* the great decider, shall have told each what he could *certainly* expect from varied effort.

I recognize as fully as any one the beautiful results which enthusiastic experts with the mallet are constantly producing—but these are mostly made in cases where *my convictions* to the use of *gold* at all; while I frequently witness the *hours* of clinics expended in malleting cohesive gold into articulating cavities of bicuspids and molars, I am sure, *from experience*, a few pellets of soft foil could be hand-pressed, in one quarter of the time, into a filling, which, I think, would prove really the more durable.—*St. Louis Dental Quart rly.*

ARTICLE VII.

Alumni Association of Baltimore College of Dental Surgery.

The Annual Meeting of the Alumni Association of the Baltimore College of Dental Surgery will be held in Baltimore on the day of the Annual Commencement of that Institution in March next. It is expected that a large number of the Alumni will be in attendance, and that the meeting will be of a most interesting character. All Alumni are invited to attend.

W. B. Wise, S. J. Cockerille,
Secretary. *President.*

EDITORIAL, ETC.

Dental Education as Seen by a Canada Editor.—A caustic editorial appears in the November number of the *Canada Journal of Dental Science*, on Dental Colleges, and the "New Departure" of the Western Dental College. The writer thinks that, save and except "the purely operative tuition," he would much prefer the English system of dental curriculum as more solid and disciplinary ; he also thinks that the chief advantages a college offers the student is in epitomizing time, and giving more practical information than can be gotten in a private office. "It is a fact," he writes, "that young men pass through college by the hundred, more filled with conceit than knowledge. * * Graduates themselves over-estimate their advantages." On these grounds the Canada Editor is disposed to think favorably of the plan instituted by the Western College. "It has a chance at least" he says, "of promoting renewed study and application among a large class of qualified men in active practice, who could not attend lectures, but who would be glad of the prospect of getting a degree, to which they might feel that they were entitled by virtue of their knowledge."

He gives some account of the knowledge or rather want of knowledge, on the part of graduates from schools in this country, which would be amusing were it not sad, as showing the utter want of any training, dental or general—showing almost indeed a want of capacity for training.

* * * * "It is a hollow farce," continues the Canada Editor, "to turn out men under existing curriculums with a D. D. S., as if it represented ability. * * There is a serious fault somewhere in the colleges. We believe it is mainly in the curriculum, but it must be partly also in the examinations, and largely too in the want of one or more General Board of Examiners. How many who have passed the examinations in

their own colleges, could have succeeded before an impartial central board," * * "Until the bare D. D. S., means more than it does now, it is not worth holding."

Thus vigorously and earnestly writes our Canadian Journalist, with what truth our readers may judge.

This question of Dental Education, we are glad to see, is making a stir, and no better evidence of progress could be afforded than the signs of dissatisfaction with the existing condition of things. Evidently there is room, vast room, for improvement in the methods of teaching and in the things attempted to be taught. But the question of reforming them is one which presents difficulties only seen by those engaged in the teaching, and it seems almost vain to explain these difficulties to those outside, who are so free in their suggestions as to what is needed.

The one great difficulty, as it appears to us, in the way of reform in dental education or dental ethics, is a want of unity and organization among the profession. Representing as it does all grades of intellect and all degrees of cultivation, (we speak of the profession as it stands to-day) there seems not the least harmony, or concert of belief or action on their parts. It is dentist arrayed against dentist in practice, and college arrayed against college in teaching, with what should be a generous rivalry perverted into a tradesman-like competition. Colleges which should confer with each other as to a common method of operations, or a mutual understanding as to the grade of studies and of previous acquirements of students, are kept apart by a spirit which seems to be, if it is not, jealousy.

There is a feature of the case which, while it is humiliating, is worth considering. Supposing, as is most desirable, that a university education were an indispensible pre-requisite to admission to a dental college, as a student; and suppose the course to be at least four years—and this is not only not too long, but hardly long enough to teach a student enough of dentistry to practice profitably to his patients—assuming all this training, will the man who has spent his nine or ten years, with the aims and desires which such training would most likely develop in him,—would such a man be willing to take the place and the pay which nine out of ten of the dentists who now practice are per force com pelled to take? For nine out of ten of those now practising dentistry cannot hope, in the districts in which they are obliged to operate, to find either congenial society or adequate pay. There is no demand for advanced men in most localities, either in medicine or dentistry; they would be dissatisfied, cramped and out of place.

It may seem hazardous to state it, but we feel impelled to the conviction that the average supply to the public of dentists, in point of quality, is equal to the demand. That there are dentists in abundance, as there are M. D's in any quantity, is plain; but the better class of people who patronize dentists do not intelligently discriminate in favor of those who are competent and educated. This is because they do not appreciate the scientific aspect of dentistry. If the public demand for men of education and scientific attainments was increased, the colleges would not be slow to respond.

This demand for additional culture does not come from outside the profession,—for the public, who employ the dentists, though complaining of their work, yet seem incapable in the main of making any adequate distinction or discrimination as to the merits of the respective claimants for practice, nor do they indeed as a rule select as the profession themselves would select;—for the dentist to the dentist is not always the popular operator of the town. The run on a particular office, as is well known, is not due always to the merits of the dentist, and if not fortuitous, is at least not the award of merit.

The pressure,—and it is one of the the things that, as dentists we should feel proudest of,—comes from within the ranks of the profession. The more cultivated are the ones who are urging the elevation of the standard of education, and it is they, not the public, who urge, entreat, demand, reform among those who are by life and act lowering its tone.

Somewhere in the hazy future we see an endowed institution or possibly more than one, selecting with the nicest care and discrimination students with liberal preliminary training,—such training as would admit them to an English University,—and these students so prepared for an ideal dental curriculum, after at least four years' careful training in the principles and practice of dental surgery, graduated. And further on still, we dream of seeing these universities taking the place of and swallowing up the dental colleges, which, having filled a useful place in their day, will become things of the past But these things cannot come to dentistry sooner than for medicine, nor is it more desirable, and how far off indeed does it seem to be for the last-named profession! Still, the tide sets slowly that way, and the good and wise of the profession are unfeignedly glad to see it. H.

BIBLIOGRAPHICAL.

Harris' Dictionary of Dental Surgery.—Fourth Edition.

We have received from the Publishers, Messrs. Lindsay and Blakiston, a copy of the new edition of "Harris' Dictionary of Dental Surgery," just issued, or as the new work is styled, "A Dictionary of Medical Terminology, Dental Surgery and the Collateral Sciences." This volume is the result of a good many months' patient labor and research on the part of the editor, Prof. F. J. S. Gorgas.

No work could be less of a showy character than the revision of a dictionary, and no work could be imagined, unless it be statistics, more dry and unsavory. Yet the editor has with untiring patience and the closest scrutiny, scanned every word of every page of the previous edition of the dictionary, with the result of making a much more valuable book than its predecessor.

The work of revision has not consisted simply of elimination, though many obsolete words are erased; but many valuable amendments to definitions are made, and many definitions made to conform to the more modern phrases of belief, very many entirely new terms in medicine and dentistry are inserted, and a number of pages of new matter added.

The whole comprises a work almost as useful to the medical as to the dental student, while to the latter it is an indispensable necessity, being indeed the only one of the sort in existence.

A new and valuable feature is the description of all the articles of the materia medica employed in the practice of dentistry, and the dental uses added to others before referred to in this work.

The publishers have made this edition of the dictionary, in point of typography, a great improvement on the previous editions. The work is stereotyped, and the print more elegant.

J. B. H.

Materia Medica, for the use of Students.—By John B. Biddle, M. D., Prof. of Materia Medica and General Therapeutics, in the Jefferson Medical College, Etc., Etc. Eighth Edition. Revised and Enlarged. Publishers: Lindsay and Blakiston, Philadelphia. 1878,

Another New Edition of this well known treatise, is an evidence of its popularity in the Medical Profession. For years past it has been the recognized text book in a large number of the most respectable of the Medical Colleges, and each revision adds to its value and increases its usefulness to the student of medicine. The preceding edition was exhausted within little more than a year after its issue, and in the present edition considerable has been rewritten and many new articles added. The illustrations, of which this work contains quite a number, represent the most important of the plants valued for their medicinal qualities, as well as instruments employed for the atomization of liquids in pneumatic aspiration, a comparatively recent process for the treatment of thoracic diseases, and which is also available in the transfusion of blood.

Dental as well as Medical Students will derive great benefit from this work on Materia Medica and Therapeutics. The type with which the work is printed are large and distinct, and the style of binding, &c., is creditable to the well known publishers of medical and dental works.

Elements of Dental Materia Medica and Therapeutics. with Pharmacopœia.—By James Stocken, L. D. S., R. C. S., Eng. Lecturer on Dental Materia Medica and Therapeutics at the National Dental College, London, Etc. Etc. Publishers: J. and A. Churchhill, London, England, 1877.

This is an elementary treatise similar in style, form and size, to a work edited by Jas. W. White, D. D. S., and published some years ago by S. S. White, of Philadelphia, under the name of Dental Materia Medica, with such additions, however, in the English work as a dental pharmacopœia, antidotes to the principal poisons, definitions of terms denoting the properties of Remedial Agents, and tables of approximate measurement, pulsation per minute at various ages, also respiration and doses for adult males, females and children. While there is much useful information in this work for the dental practitioner and student, yet it is too elementary in its character to be adopted as a complete text book in dental colleges, where more of the phyiological effects, chemical constituents, and medicinal uses, as well as dental uses, of the different agents composing dental materia medica should be taught, than is contained in this small work. Its size does not admit of the notice of quite a number of the agents now employed therapeutically in dental practice. Lindsay and Blakiston, Philadelphia, are the American publishers.

MONTHLY SUMMARY.

A New Cause for Alarm.—Arsenic!—A German Chemist has found arsenic in vulcanite supposed to be an impurity in the sulphur used for vulcanizing Caoutchouc. May not this unsuspected enemy be a cause of some of the sore mouths, the result of wearing these rubber plates. The Chemist rarely finds anything save the thing he is looking for, and as the efforts have all been in the direction of search after free mercury &c., would it not be well to investigate the Arsenic question?

Specific for Diptheria.—Dr. Chapman, of Brooklyn, New York, claims Alcohol as a specific for diptheria, reducing the death rate from eighty-seven to the hundred cases to less than four. He combines with alcohol,(in the form of whiskey) quinine though the latter is not essential. He claims great success and says that he has never heard of but one drunkard having the disease, and states further that alcohol so administered has none of the intoxicating effects seen when given to persons in health. He considers alcohol as an antidote to the diptheritic poison.

Phosphate of Lime in Relation to Fractures.—In a recent thesis, M. Midrin, in reference to the question, whether the administration of phosphate of lime hastens the consolidation of fractures, comes to the following conclusions:—1. Phosphate of lime cannot be relied upon for this purpose. 2. Introduced directly into the economy, it is not absorbed when it is insoluble. 3. When given in a soluble form it is eliminated in the urine. 4. It is furnished in sufficient quantity by milk, bread, cereals, seeds, etc., and is assimilable only in this manner. 5. Its immediate action is only antacid and absorbent.—*Med. and Surgical Reporter.*

Functions of the Liver.—In a paper to the Paris Academy of Science, Dr. Claude Bernard contributed some new researches on the sugar-forming theory of the liver, and concluded :—

1st. That the glycogenic property is inherent in the tissue of the liver.

2nd. That this property manifests itself during life, and a certain time after death.

In the *Philadelphia Medical Times* of May 26th will be found an elaborate account by Dr. Lautenbach, of the results derivable from 283 experiments performed by him in Professor Schiff's laboratory, and leading to these conclusions:—1. The liver has for one of its functions the office of destroying certain of the organic poisons. 2. A poison is being constantly formed in the system of every animal, which it is the office of the liver to destroy.—*Med. and Surgical Reporter.*

Preparation of Celluloid.—This substance, much used in dentistry, is prepared as follows :—

Paper is treated by a continuous process with five parts of sulphuric acid and two of nitric acid, which convert it into a sort of gun cotton. The excess of acid is removed by pressure, followed up by washing with abundance of water. The paste, when thus washed, drained, and partially dried, is ground in a mill, mixed with camphor, ground again, strongly pressed. dried under a hydraulic press, between leaves of blotting paper, cut, bruised, laminated, and compressed again in a special apparatus suitably heated. It is said to be hard, tough, transparent, elastic, fusible, becoming plastic and malleable at 125°. It ignites with difficulty, is decomposed suddenly at 140° without inflammation, and gives rise to reddish flames. It is inodorous, and does not become electric on friction.—*Med. and Surgical Reporter.*

Colored Borax Varnishes.—It is well known that an aqueous solution of borax is able to dissolve shellac, forming a kind of varnish, to which any desired color can be imparted by mixing with pigments. Major Dr. Kahl, of Dresden, has communicated to the Dresden branch of the Saxon Society of Engineers the results of a large series of experiments made with these varnishes. He reports that they are very cheap, and dry very quickly, but they scale off from wood too easily. When this varnish is colored black with India ink and applied to paper, it possesses a fine gloss, but other colors, especially carmine, when mixed with this solution acquire an impure shade, and many pigments cement together in this solution, forming a hard and totally useless mass. The black shoe polish sold for ladies' boots is often made by adding some black pigments to this shellac solution. For bronze boots, rosanilin may be dissolved in any alcohol varnish.—*Scientific American.*

Mastic for Fastening India Rubber on Metals.—A mastic for fastening India rubber on metals may be obtained by steeping gum-lac, in the form of pulverized scales, in ten times its weight of concentrated ammonia. A transparent mass is thus formed, which, at the end of three or four weeks, becomes fluid without the use of warm water. This substance, applied on India rubber, becomes hard, and completely impervious to liquids and gases.—*Chemist and Druggist.*

To take Rust out of Steel.—Place the article in a bowl containing kerosene oil, or wrap the steel up in a soft cloth well saturated with kerosene; let it remain twenty-four hours, or longer; then scour the rusty spots with brickdust. If badly rusted, use salt wet with hot vinegar: after scouring, rinse every particle of brickdust or salt off with boiling water; dry thoroughly; then polish off with a clean flannel cloth and a little sweet oil.—*Scientific American.*

The Dangers of Ether.—It has always seemed to us the height of folly to declare there could be no danger in any anæsthetic. The lesson taught by a late death from nitrous oxide, has it is to be hoped, been well learned, and we shall in future hear less of the absolute safety of any agent capable of depriving a person of all sensation. Some cases in which ether has been followed by alarming symptoms have lately been recorded. They have been termed syncope, but the word is not appropriate, as the heart continued to beat after respiration ceased. This is what should have been anticipated. When death is produced by ether the animals's heart continues to beat long after the arrest of respiration. The pulse is quickened by ether and maintains its force through a long state of anæsthesia. In these facts lies the safety of ether. But it should never be forgotten that there is danger at a certain stage, and the danger is from the side of the respiration, which at length ceases. Stertorous breathing proceeds from paresis of the muscles of the palate, and should lead to the ether being suspended. So respiration growing more and more shallow and less frequent is a warning and should not be overlooked. It is very rare that the heart fails—perhaps never. Pallor is rare, too, and should excite attention if it occur. But, we repeat, the danger of ether is from the side of respiration, that of chloroform from the heart, and this fact goes far to explain their relative safety. In chloroform narcosis the danger is much more sudden. Ether gives warning.—*The Druggists' Circular.*

Bichromate of Potash as an Antiseptic.—M. Laujorrois lately presented a note to the French Academy, on the antiseptic properties of bichromate of potash. Experiments had shown him that the addition of one-hundredth part of bichromate in ordinary water prevents the putrefaction of all sorts of organic matter, such as meat, urine, etc. A thousandth part of bichromate prevents beer from turning sour. After three months' immersion in a solution, meat was hardened and dry.—*Phar.*

Properties of the Human Gastric Juice.—M. Charles Richet has been studying these matters upon the person of the patient on whom Verneuil successfully performed gastrotomy. He has reached the following conclusions: 1. The acidity of the gastric juice, whether pure or mixed with food, is equivalent to 1.7 grammes of hydrochloric acid to a thousand grammes of fluid. 2. Acidity increases slightly at the end of digestion, and is independent of the quantity of liquid contained in the stomach. Wine and alcohol increase, but cane-sugar diminishes it. 3. If acid or alkaline matters are introduced, the gastric juice tends to return to its normal acidity. 4. The mean duration of digestion is from three to four and a half hours or more. Food does not pass successively, but in masses. 5. According to four analyses made by a modification of Schmidt's method, it was proved that free hydrochloric acid exists in the gastric juice. 6. It is possible to extract all the lactic acid contained in the stomach, and to prove that there is one part lactic acid to nine parts hydrochloric acid. 7. Following the method of Berthelot, that is, by agitation with anhydrous ether and deprived of alcohol, it can be shown that lactic acid is free in the gastric juice. 8 The question so long in controversy as to the nature of the free acid in the stomach seems almost solved, and it may be said that in every 1.000 grammes of gastric juice there are 1.53 grammes of hydrochloric acid and 0.43 of lactic acid.—*Lyon Medical.*

Salicylic Acid and Borax.—It may be interesting and perhaps useful for some readers of the *Journal* to know, that while a solution containing ten grains of salicylic acid and ten grains of borax in one ounce of water, has a very bitter taste and an acid reaction, a solution containing ten grains of salicylic acid and fifteen grains of borax has no disagreeable taste, and is nearly neutral. This solution appears to possess all the valuable properties of salicylic acid, and forms an agreeable means of using the acid internally or as a gargle.—S. N.—*Lond. Pharm. Journal.*

Nitrite of Amyl.—Mr. W. Lemon Lane, M. B., as the result of experiments upon kittens, publishes the following conclusions:

1. Amyl nitrite, when inhaled in small quantities, produces reddening of the face in man, and of the nose and mouth in kittens; this action is due, according to Brunton, to the dilatation and overfilling of the arterioles.
2. Large quantities, by inhalation, produce in kittens cyanosis of the nose and the mouth, along with insensibility. The former arises from over-distension of the venous system, this being due to the engorged arterioles propelling the blood into the veins, while the insensibility probably arises from over-distension of the venous system and of the heart.
3. When inhaled in small quantities it produces recovery from chloroformic insensibility by dilating the arterioles of the brain, and thus removing the cerebral anæmia due to the chloroform.
4. When inhaled in large quantities, instead of producing recovery from chloroformic insensibility, it not only retards it but it may cause death by paralysis and over-distension of the heart and engorgement of the venous system.
5. It causes a rise of temperature when inhaled in small quantities, by the increased amount of blood in the arterioles causing an increased tissue change in the body.
6. In large doses (inhaled) it produces a fall of temperature.
7. It also helps to produce recovery from the chloroform insensibility by raising the temperature which is always lowered by chloroform, and by removing the paralysis of the heart due to chloroform; this action is well seen by the nitrite of amyl making the heart's beat fewer and its sounds louder.
8. Death is caused chiefly by paralysis of the heart, which is shown by all its cavities being distended, and by engorgement of the venous system.—*British Med. Journal.*

Atheroma.—At the sitting of the Society of Public Medicine (Paris, June 27th,) M. Gubler communicated an interesting paper on arterial atheroma. He believes many influences are at work in producing this alteration; whilst the rich in their old age are often exempt from it, the role of alcohol, as a cause, has been blamed too much; the rich drink as much as the poor; alimentation plays a more important part: the wealthy have a more succulent and azotized diet, whilst the workman eats such vegetables as horse-radish and apples, which contain a large quantity of calcareous salts. The frequency of atheroma among those who abuse vegetable diet is due to these calcareous salts, in virtue of general laws. The algæ retain the iodine and bromine they take up in the sea, and from analogy, he considers that mineral solutions leave their salts in the tissues. Cretification especially takes place when the tissues are not well nourished ; the middle coat of the arteries belongs to this class, and is supported by imbibition. M. Gubler thinks it worthy of research to compare the frequency of atheroma among the rich who adopt a vegetable diet. The rarity of atheroma in localities poor in silica has been established, whilst Dr. Leblane has verified its presence in Orleans, a lime formation, and Dr. F. Raymond has noticed indurated arteries in many young monks of the order of Chartreux, who lived exclusively on legumes.—*Med. and Surg. Reporter.*

A Daring Therapeutist.—At a late meeting of the Massachusetts Dental Society, Dr. Waters, of Salem, stated that bicarbonate of soda, such as used for cooking purposes, or any other alkali in neutral form, would afford instantaneous cessation of pain from the severest burns or scalds, and would cure such injuries in a few hours. Dipping a sponge into boiling water, the Doctor squeezed it over his right wrist, producing a severe scald around his arm and some two inches in width. Then, despite the suffering occasioned, he applied the scalding water to his wrist for half a minute. Bicarbonate of soda was at once dusted over the surface, a wet cloth applied, and the pain the experimenter stated, was almost instantly deadened. Although the wound was of a nature to be open and painful for a considerable time, on the day following the single application of the soda the less injured portion was practically healed, only a slight discoloration of the flesh being perceptible. The severer wound, in a few days, with no other treatment than a wet cloth kept over it, showed every sign of rapid healing.—*Medical and Surgical Reporter.*

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ARTICLE I.

Annual Address of the President of the Virginia State Dental Association.

[Delivered at the Eighth Annual Meeting of the Association, at Richmond, Va., Dec. 11th, 1877.]

Gentlemen of the Virginia State Dental Association.—In obedience to that usage which demands of your President an Annual Address, we ask your attention to a few plain and practical reflections upon the profession of Dental Surgery in its legal aspects and relations in the State of Virginia.

Perhaps, we might more properly and accurately say, to the *absence* of all legal relation, recognition, protection or encouragement, under which the dentists of this Old Commonwealth have up to the present time, studied, cultivated and practiced a profession indispensable to the comfort and welfare of society.

It is, Gentlemen, a curious and inexplicable feature in Virginia legislation that almost every subject and interest and vocation, in which men occupy or employ themselves for their own, and for the public benefit should have received the fostering care and encouragement, the notice and protection of our laws—save and except the great and important subjects and interests of Medicine and Surgery.

From the preservation of sparrows and singing-birds, to the subsidy and endowment of Rail Roads, Canals and Universities; from the hatching of fish-spawn to the protection of our property, our character and our lives, the Codes and Statute books teem with enactments and provisions. The *ægis* of the law spreads its broad and ample folds over every subject and every interest, however trivial or however vital and important. Our affluence of law has passed into a proverb; our wealth of jurists, statesmen, philosophers and scholars has been our boast for years and years; and yet a great and important interest, inseparably identified with the health, the comfort and the happiness of society has been overlooked, neglected, or designedly remitted to the unaided care, and unrequited labor of the physicians and the surgeons.

With the exception of a few vague, and for the most part ineffectual provisions against malpractice, and the dispensing of poisons, "*Silent Leges*" might be written against medicine and surgery. The wise and the foolish, the cultured and the ignorant, the skilful and the blundering, the faithful and the conscientious, all occupy the same legal plane, and like our "American Citizens of African descent," are all "peers and equals" before *Virginia Law*, having the same rights in practice, enjoying the same privileges and immunities in administering to the professional needs of society, of relieving or aggravating human suffering, of restoring or maiming, curing or killing as accident, or good or ill fortune, may provide the service of a true physician and surgeon or the ministrations of the charlatan and impostor.

We repeat, that it is wonderful and inexplicable that uch interests involving the issues of human comfort and human life itself, should up to the present day have received so little attention, and awakened so little concern in the minds of our citizens, and their representatives in our General Assemblies; and equally amazing that this indifference and neglect should so long have been acquiesced in and submitted to by the legitimate representatives of medicine and surgery.

It is true, that recently the physicians of the State under the auspices of the Medical Association of Virginia have made a move in the right direction, and have asked at the hands of our legislators and lawgivers some recognition of the claims and needs of medicine and surgery and that the practice of these departments of science in Virginia may hereafter be regulated and controlled by judicious legal enactments and statutes. But we are informed by Professor Cabell, the President of the Medical Association, in his late address before that body, that nothing has been accomplished. A great and important measure "hangs fire" in our legislature from some unexplained cause. Perhaps it has not been pressed with sufficient energy, perhaps our representatives hesitate, because the subject has not been sufficiently popularized or sufficiently discussed and ventilated to impress them with a just sense of its importance and magnitude.

However that may be, the sad truth confronts us, that medicine and surgery, physicians and dentists, remain in "*Statu quo*," unrecognized, unprotected and unaided by any legal enactments or wholesome regulations for the practice of these important and indispensable professions.

And now, gentlemen, it becomes us, as the representatives of a cognate and intimately allied department of general science; suffering as we do the same disabilities, experiencing the same disadvantages, and laboring under the same and even greater obstructions to satisfactory, to successful development and compensating practice, and to the attainment of that *status* and consideration which are no less the object of a praiseworthy ambition, than the great and lasting benefit of our fellow men, that we "speal out," that we let our voices be heard, and our influenc felt, in this crisis of our professional history.

Nay sirs, we are *more* urgently and imperatively calle upon to take this position, and make this demand for law regulating the practice of dental surgery in Virginia tha are our friends the physicians and general surgeons. Th difficulties we as dentists have to encounter, the wrong and abuses we have to combat and contend against, are a flagrant, and as damaging as any that confront the phys cian or the general surgeon and if these, with all thei traditional, established and time honored claims, privilege and advantages, experience the need of legal interpositio and protection in the practice of their specialties of scienc how much more urgent, and pressing is that necessit with *us*, whose relations, positions and *status* are yet eve to-day subjects of debate, of contest, and of conflict.

We know, Sirs, it will be objected that we are askin "class legislation," that we are infringing, or attemp ing to infract the rights of others, for our own advantag and benefit. We shall be told, that all such matters an subjects should be allowed to adjust themselves, or to b arranged and settled by the fiat of public and popul opinion, etc. Such objections and arguments, while sp cious and plausible, are really unsound and untenable; an cannot bear the test of just criticism or fair analysis.

It cannot be "class legislation," because it is a questio involving the interests and welfare of society, the comfo and safety of the patient, as well as the reputation an reward of the practitioners. In the "case at bar," as ou friends the lawyers would phrase it, society is wholly an entirely comprised in the two classes, practitioners an patients, dentists and people; one, or the other or both, a benefitted or damaged, according to the character and c pacity of our dentists, or the nature and quality of the se vices rendered and any legal recognition or encouragemen or legal restriction or regulation that tends to the advanc and improvement of any profession or department of science, must of necessity, inure to the good and benefit of society at large for whose wants and needs the sciences and professions are cultivated and practiced. It is true, that in this movement, we propose to benefit directly all *competent* and *qualified dentists* in our State, to benefit dental surgery as a science and an honorable profession; and at the same time, and by the same means, to confer an equal and equivalent benefit upon society and our fellow men. In no just or fair sense can our proposed measure be denominated "class legislation."

We cannot be infringing, when we deny to the incompetent, the unscrupulous and the unprincipled, the privilege of undermining and sapping the foundations of our professional prosperity, of trifling with our health, of destroying our peace and comfort, and in some instances of sacrificing our lives. As reasonably might we talk of infringing the rights and privileges of the common swindler, the pick-pocket or the highway-man in the exercise of their vocations.

The only business or professional rights and privileges that will stand the crucial tests of reason, of justice, of law and of truth, are *those* rights in the employment and exercise of which we benefit ourselves, while doing a positive good and while conferring a relative, or equivalent benefit upon our neighbors and fellow men.

As dentists, we have the unquestionable right of supporting ourselves and our families; of acquiring wealth and reputation, by relieving the oral troubles and preserving the teeth of our patients, and patrons; but no one of us has the right to make money, or achieve honorable distinction by ignorantly aggravating the ills of our employers, or by abusing and destroying the invaluable organs we profess to restore and to preserve.

But, say some of our friends, "let these matters adjust and cure themselves; dont let us assume a suspicious attitude; dont let us *appear* to be seeking our own advantage, at the expense of others who claim as we do, to be dentists worthy of public confidence and patronage; let society purge and purify our profession by sustaining and encouraging the worthy, and reprobating and ignoring the worthless and mischievous."

Gentlemen, there are some ills and disorders in professions, in society, in morals and in physics, that left to themselves, can *never* reach a proper adjustment or radical cure. There are professional, as well as physical ulcers, and cancers, which *never* resolve or cure themselves, and it is no exaggeration or extravagance of language (as *you* well know,) for me to say, that *our* profession has been the subject and victim of these festering and cankerous sores sufficiently long. We have waited patiently for self correction, waited for the effect of social power and influence, and waited in vain. If there be merit in patience, we have surely earned it; if there be virtue in forbearance we have strained that principle, until it has lost its proverbial quality.

So long as we continue to wait for "self adjustment, or social regulation," just so long, may we expect to have our profession prostituted, and our escutcheon blurred and stained, the appreciation of our best skill and highest talent abated, and the recompense of our most finished and faithful service diminished by competition with pretenders and impostors.

In the larger towns and cities of the commonwealth, the centres of wealth and refinement, the evils of unrestricted quackery in our profession are less seriously felt than in the small towns and rural districts. In the cities, there are always found a wealthy and discriminating class of patrons and patients, who may be relied upon to appreciate and generously compensate skill and talent; but with the masses in the villages, hamlets and country districts, a dentist is a dentist; "good, bad, or indifferent," his placards and show-bills proclaim him a dentist, and the cheapness of his terms is the successful card he can always play against the most accomplished and deserving of our brotherhood.

I assert what I know to be a fact, that some of the most able, faithful, and skillful practitioners we have, are obscured, overslaughed, and kept poor and dependent, by the unlicensed competition of men who could not give you the technical names of the organs they assume to operate upon and preserve; who could not tell you, if their lives hung upon the answer, of what elements and substances the human teeth are composed, or even how and by what agencies the human mouth is opened or closed.

And yet, these men by reason of the unrestricted freedom accorded them here in Virginia, are monopolizing a large percentage of our practice which they command by underbidding and over-boasting, and which they make profitable to themselves, by the employment of the most inferior materials, and by the most hasty, slovenly and most discreditable of all imaginable botch-work. Thus has our profession in Virginia been abused and dishonored, and thus have some of our best men been kept down, impoverished, and in some instances completely bankrupted.

As President of this Association I have again and again been appealed to, from almost every section of the State, to do *something*; to inaugurate some measure to check, abate, or suppress the evils of indiscriminate and unlicensed dental practice, to do *something* to stay, or roll back the flood-tide of pretence and knavery which is washing away, sapping and undermining the very foundations of professional character and professional prosperity; which is blighting the hopes, blasting the prospects, and withering the energies of many of our capable, faithful, and deserving men.

The "rubber dentist," with his "Kit," his "Vulcanizer," his "Amalgam," and his "Gutta percha pellets," is ubiquitous; he springs out of the cross roads grocery, the shops and stores, the fields and back-woods forests. With the wonderful versatility and impudence that distinguishes these peripatetic vendors of rubber and cheap porcelain, they usually enhance their consideration, and increase their professional consequence, by the exhibition of varied talents and accomplishments. These gentry frequently combine with dental practice, the arts of cementing broken glass and crockery, the repairing of wood clocks and sewing machines, the refitting and furnishing of musical instruments, and such other gifts and talents as may be in demand, and serve to fill the intervals in more strictly professional (?) occupation.

I need not startle you, Gentlemen, when I tell you that I have had the honor of competing for practice, with an individual who tramped my neighborhood from house to house, and who received no mean amount of patronage, as he operated upon the teeth, the pianos, the sewing machines, the clocks and watches, the broken crockery and the dilapidated tin ware; and that that man tramp, impostor, and swindler as he was, enjoyed all the privileges and immunities that you, or I or any one else can claim under our present laws and usage.

As we have said, (and most of you too sadly know,) we have these disqualified, incompetent and mischievous men all over the State. Every community is more or less infested. We have them of home production, and of foreign importation. They are annual and perennial. When one vanishes, and disappears with his ill-gotten booty, followed by the imprecations and curses of his victims, another arises to take his place, and follow in his footsteps. And here Gentlemen, we fain would draw the veil and drop the curtain; but there is another element, another class in our profession, happily for us, not embraced in our Association, but scattered throughout the State, far more potent for mischief, far more effective in damaging and debasing our calling. These are men against whom no legislative enactments can prevail; men who have been instructed and qualified in our colleges, and who hold their diplomas, as evidence of merit and trustworthiness; and who have let themselves down, and drifted into the habits and practices, the measures and methods of the lowest and most contemptible of our common quacks and charlatans.

As I have said, such men cannot be reached or restrained by legal enactments. As a rule, they have been well taught, and could creditably acquit them-selves before any board of examiners, even if their diplomas did not except them from enquiry or examination. But Sirs, we can, and we do hold them up to professional reprobation; we can, and we do "pillory" them in professional indignation and contempt; we point to them as recreant sons of their "*Alma Mater*," and as the *black* and *scabby* sheep of our flock.

As I have the satisfaction of addressing one of the Professors of our Colleges, who has honored us with his presence, I beg leave to say, that I in no wise mean to reflect upon the Colleges, or the Faculties and teachers. I most cheerfully acquit them of all responsibility for the misdoings and short comings of some of their graduates. But I do mean to make this appeal to the Professors, that they spare no effort, while making good scholars and operators of their students, to make them also elevated gentlemen. Inspire them with sentiments of professional dignity and honor: teach them, that he who stains his diploma and by unworthy practices, is a bastard and an outcast, an alien and an enemy, that his rank is dishonored and forfeited, and that he no longer can claim a place in the "household of our faith."

And now Sirs, to return from this digression; we beg to submit that here in Virginia, we have tolerated these abuses in dental practice, about long enough. Thirty years ago, the State of Alabama found it necessary to protect her citizens, and her true professional men by the enactment of laws and provisions, regulating and restricting the practice of dental surgery within her boundaries. Subsequently, and in succession, the States of New York, Ohio, Georgia, New Jersey, Pennsylvania, South Carolina, and we think several of the North Western States, enacted similar laws and regulations.

We are informed that the effect of this legislation has been wholesome and salutary wherever tried. It has protected society from imposition and abuse, it has protected the rights, and interests of the legitimate, and acknowledged members of our profession in those States. Dental science has been fostered and encouraged, and dental practice has been made more respectable and compensating.

But Sirs, one of the results of this neighboring legislation has been to Virginia, and other States having no law or regulations upon their subject, most prejudicial and unhappy, and deserves our most thoughtful consideration.

Virginia, and other States similarly circumstanced, have been made "lands of refuge," Penal Colonies, "Botany Bays," for such of those professional (?) gentlemen ? as were forced to "leave their country for their country's good"—and for such as could not at home practice their vocation with impunity or safety. My own distinguished (?) competitor, to whom I have made allusion, was an exile from the state of New York or Pennsylvania. There, he would have been promptly arrested, and fined or imprisoned. Here in Virginia, he could practice his frauds and impositions at his will and pleasure—" none dare molest, or make him afraid;" he was our peer and equal before Virginia law.

And now, Gentlemen, in view of the facts and considerations we have attempted to address to you, in view of the great injury we, as a profession, have so long and so patiently suffered, in view of the continued and increasing prostitution of a necessary and an honorable profession; and especially in view of the happy and healthy consequences and results which have been realized in our neighboring States, we feel that we cannot perform a more important or valuable service than to direct your thought and attention to this subject of legal regulation of the practice of dental surgery in our own commonwealth.

We trust it may be your pleasure to refer this subject to a committee of your members, with instructions to consider the policy and expediency of an appeal to the present legislature, for the enactment of such laws, regulating and restricting our "practice," as have been found favourable and efficient in other States and jurisdictions.

We submit in conclusion, that this proposed movement is timely and opportune. We believe that Virginia is upon the threshold of great and important changes; we believe that this grand old commonwealth, is about to emerge from the darkness and gloom that has shadowed and enveloped her varied and diversified interests;—that she is about to shake loose the shackles that have paralyzed her energies, diminished her productions, depressed her manufactures, crippled her trade, and obstructed her recuperation.

We believe that we are approaching an era in which all our civil and political rights and privileges are once more to be recognized and enjoyed, and all our material interests quickened and revived. Good government, wholesome laws, immigration, and the inflow of foreign capital, are to be mighty factors in this anticipated change. The arts, the sciences and the liberal professions will acknowledge and respond to the inspiration and impulse that returning prosperity always sets in motion; and we desire that department, *that profession* to which we have dedicated and devoted our labors and our lives, to come to the front disenthralled, unembarrassed, unobstructed, and with all the helps and aids of faithful *culture* and *practice* on *our* part, and all the assistance and encouragement that can be derived from wise and judicious legislation on the part of our representatives and lawgivers.

ARTICLE II.

Annual Meeting of the Virginia State Dental Association.

(Continued.)

[Reported for this Journal by Prof. J. B. Hodgkin.]

Prof. Hodgkin said that he hailed with joy any plan of filling roots which promised better success than the methods commonly practised. For his own part he found it the most difficult of all the operations he was called on to perform, and he had to confess that no method he had used seemed perfectly satisfactory; and all were difficult of performance. So far as filling roots with cotton and os-artificial, or Hill's stopping, he had never felt satisfied with the results, or at least never felt satisfied that what he wished done had been done. There seemed to be no way of determining whether or not these materials had filled the root or not. The difficulty in the description of the method of Dr. Moore, as given by Dr. Johnston, was that an ideal root was filled, and not a sure-enough one, as the children say. The anterior superior roots were comparatively easily filled by any method; the ones that gave the real bother were the flattened roots of molars and bicuspids—those wretched lower molar roots, which seem as if designed purposely to baffle us.

To that prince of dentists, Dr. Edward Maynard, he was indebted for a method of enlarging canals—and he, in opposition to the practise of Dr. Johnston often found this necessary—which greatly simplified this work. A drill should never be used to enlarge a canal; you know where it goes in but you do not know where it will come out. He had seen a forcible illustration of this in the case of a gentleman who had a tooth filled and the roots enlarged by one of the most widely known dentists of the North. The gentleman for whom the tooth was filled came to Dr. H. with it aching terribly, and badly abscessed. It was a superior 3d molar. In his pocket-book he had a card which the operator had given him, on which was a diagram of the tooth and the filling, showing the three roots, filled with gold, and on that gutta-percha, the crown cavity being filled with gold. All very pretty on the card. But on removing the tooth, instead of three roots, there was but one, curved backward like a cow's horn, and the drill which had been used to enlarge the canal, had passed out into the alveolus, and the gold filling had followed it, protruding out of this cavity and pressing on the bone, with of course the inevitable result.

A piece of piano wire about the size of a small knitting needle and two inches long, made the very best instrument for enlarging root canals. Put this in a light wooden handle, and wood is best because of its lightness—touch has to take the place of sight here,—the end to be filed down to such a size as will pass into the canal, and made smooth with emery paper and a burnisher, and with a series of barbs cut on one side with a chisel, and we have here something that is simply a miniature mouse-tail file, and which will remove the soft dentine of the pulp canal very rapidly. These little instruments are very elastic and at the same time sufficiently hard, and when the barbs become dulled they can be burnished down and others cut on another side of the same wire. In this way in a few minutes a root can be sufficiently enlarged to get in a gold filling, and the same instrument answers for a plugger, with a little alteration.

Dr. Thackston said that at this late hour he would not attempt any prolonged discussion of the paper of Dr. Thompson. He could give no good explanation of the cause of the nervous exhaustion produced in us by certain patients. That the question of brain worry or brain fag had something to do with it, it was undoubtedly true, but still it seemed to require other explanations, and was one of those wonderful psycological facts incapable of explanation. Sometimes we feel better on approaching than on receding from a patient, but what this influence is he could not tell. That it is a fact, is beyond question, but we cannot say how or what it is.

In reference to Riggs' disease, so called, which Dr. Thompson had spoken of in his paper, it may not be known to the younger members of the profession, but this subject had been investigated in the most careful and exhaustive manner by Dr. Hayden, thirty five years ago, and was at that time a subject of the most bitter controversy, and was designated by Dr. Hayden, as "conjoined suppuration of the gums and alveolar processes," and the conclusion was reached that after the disease had reached a certain stage there was no remedy. His own experience as a dentist had led him to the same conclusion, and he had found that after all his labors to retain such teeth, the termination of the disease was, as a rule, extraction. The rough calcareous deposit on the teeth down to the apices of the roots was impossible to remove with any instruments, and it consisted of exceedingly hard pointed, corundum-like crystals, sharp as barbs, often deposited to the end of the root. He did not consider this to be tartar. All this parade about Riggs' disease is a sham—the disease was well and accurately described by Dr. Hayden, 35 years ago. Nor did he believe, as Dr. Atkinson teaches, that the alveolar border would or could be reproduced after removal.

Prof. Hodgkin related an interesting account of a boy aged about 10 years, whose lower maxilla from the right angle to the left articulation was removed entire. The bone was extensively necrosed, the result of profound mercurial salivation. The operation was one of great neatness, the entire bone being removed from within the mouth, thus avoiding hemorrhage and disfigurement of the face. The extraordinary part of the affair was that the entire jaw had been reproduced in the space of about two years—smaller it is true, but as perfect in form and function as the original bone. The right lower second molar was in position, but no other teeth. It is interesting to know that nature from the periosteum can thus reproduce an entire bone; it would be still more interesting could the teeth be reproduced. The articulation of the new jaw is perfect, so far as can be discovered.

Dr. Thackston related a case somewhat similar, in which the bone was destroyed by phosphorous poisoning, and reproduced, smaller and less perfect than the original. He did not think, however, that any one had been able to reproduce the alveolar process when it was once destroyed.

While he was speaking he would advert to a subject belonging to the scope of the paper. He referred to the statements lately made by sundry gentlemen in societies, in which they asserted that a great deal of unnecessary time was spent over fillings, and that the time of performing operations (gold fillings) need not average over fifteen minutes, and strangely enough such statements were endorsed by such men as Dr. Atkinson. He wished to warn the young men against falling into such errors.

Prof. Hodgkin stated that he had it from a friend that another prominent New York dentist stated that he had filled twenty-five cavities with gold in two hours.

Dr. Moore said that he had seen some of the work of some of these prodigious men, and it certainly bore evidence in point of worthlessness of having only taken a short while.

Prof. Hodgkin suggested that happily the reason the fillings come out, might be found in an excuse for such tumblings at the hands of a man more ready at making excuses than he was for enduring work;--the excuse he gave, was that some teeth had no affinity for fillings, and in such teeth they would not stay.

Adjourned to meet at four P. M.

SECOND DAY—AFTERNOON.

The subject of Operative Dentistry was continued by Dr. Chewning, of Fredericksburg, who spoke of his unsatisfactory efforts at bleaching teeth. In many cases in which the bleaching seemed perfect, in a few weeks or months the discoloration returned. These failures were mortifying, and any light on the subject would be thankfully received. He had used chlorinated soda, usually

Dr. Johnston's method, and success, was much the same as that of the previous speaker. He was not often successful. The trouble seemed to be that the tubules of the dentine were filled with decomposed blood, and no agent that would not displace this, would accomplish the desired result. The worst cases were those in which the teeth had been devitalized by a blow or fall. He had used with good results dry chloride of lime, and sometimes by lining the tooth with Gillois' cement, the dark line was taken away by the whit back-ground.

Prof. Hodgkin agreed with the previous speaker, that these were among the most uncertain operations we were called on to perform. In spite of his most patient efforts, the case occasionally relapsed into its original objectionable condition. Had used chlorine gas with great transient benefit, but it seemed no more permanent in its effect than the ordinary bleaching agents, which mostly depended on the disengagement of their feebly combined chlorine. The use of acids was recommended by some, but it seemed that any acid which would bleach the tooth would injure its structure.

Dr. Thackston said his thirty years' experience was about equivalent to that of the previous speaker, and was in the main unsatisfactory. The discoloration was due to the remains of the circulation left in the tooth structure, and our success depended in part on the difference in the teeth operated on. In open, porous teeth, the operation of bleaching was speedily performed, and as speedily failed; in the denser and more solid teeth, the progress of restoration was slow, but the results were more satisfactory. The soonest bleached, the soonest relapsed, was his observation. He had tried everything that had been spoken of from time to time—oxalic acid, &c., but he had no certain success.

Prof. Hodgkin gave some account of Bonwill's method of pivoting teeth, illustrating his remarks by diagrams on the blackboard. He spoke of this method as the best, in his judgment, yet devised for pivoting, and earnestly advised the use of this or some other method of inserting artificial teeth in preference to plates.

Dr. J. B. Wood, of Richmond, gave an interesting account of a method of pivoting, practised by him, which had proven so satisfactory as to entirely displace all other pivots. His plan was to get his jeweller to draw a soldered tube over a piece of half round gold wire, which had been folded on itself, thus making a split pivot within a gold tube, the one fitting the other perfectly. The root was prepared much as for a wooden pivot, with the addition that near the orifice of the pulp chamber undercuts were made, and so much enlargement as would allow gold to be packed in around the tube. The tube is now placed in position, and fits neatly the enlarged canal, and cohesive gold is packed around the outside of the end and a flush filling made, the outside lower end of the tube being roughened to hold the gold more perfectly. No rubber dam is necessary. The most effective hœmostatic he knew of was simple tincture of iodine. It stopped the flow of blood and of all moisture more perfectly than anything he had ever seen.

The tube in position and the filling completed, the rest of the operation was simple. The wire was placed in position in the tube, the end a little projecting, a platinum disk was filled over this with a burnisher, a plate tooth was backed, and the relative positions of the two secured by an impression, the case soldered and finished. He had found this method to be easy and satisfactory. The wire and tube he had prepared in some little quantity, and it was always ready for use.

Dr. Wood's method for filling roots was different from that pursued by some who had spoken.* He used both Hill's stopping and common India rubber (vulcanizable gum), for filling roots, using very small fragments of Hill's stopping and jeweler's brooches warmed to force it up. In very small roots he used a fine silver instrument, coating it with rubber, and forcing it gradually up. In teeth experimented on in the hand, he had repeatedly, from too great pressure, seen the Hill's stopping exude from the apicial foramen.

In treating abscesses, he considered it essential to rapid cure that the foramen should be tightly stopped. He used tincture of iodine, pumping it in till it appeared in the

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*Note.—Dr. Wood described these methods to the reporter *after* the close of the evening's session, but for the sake of convenience they are introduced here.

fistulous opening, and then stopped up the foramen as tightly as possible with floss silk, the idea being that any liquid accumulating in the root is more readily decomposed if in bulk, but if outside it is carried off by the absorbents. He has had uniform success by this method. He fills the root as soon as circumstances will justify.

Dr. Wood also reports 32 cases of extraction and replantation, with 8 failures. He considers it absolutely necessary to success that the tooth should be returned to the socket as soon as possible and to accomplish this he only fills the end of the root, at the time, filling the rest of the tooth after it has become firm. These cases represent incisiors, bicuspids and lower molars.

Dr. Burton described a method of pivioting a tooth which he thought possessed some merit. It consisted in filling the root—a badly decayed one—with ordinary red gutta-percha, and warming the wooden pivot, forcing this up into place. A tooth so pivoted, and subject to great and habitual strain, remained quite firm.

Prof. Hodgkin took exception to the metal tubes described by Dr. Wood, and metallic pivots of that class in general on the ground, that the slight motion inseparable from the act of mastication, would cause wear and consequent loosening of the pivot. The necessarily small size of the pivot and the great strain brought on the tooth will loosen it in a short time. The method of Bonwill has the advantage also of a fluid tight joint made by gutta-percha, while at the same time this latter material is not exposed to wear; while the tooth itself is held firmly in place by a bolt and nut.

The name of Dr. T. G. Cowardin was proposed for membership.

Dr. Steel, from the special committee on the President's address, offered the following report:

The committee, to whom was referred that portion of the President's address, advising the expediency of seeking legislative protection for our profession, beg leave to report that, having carefully considered the subject, and being satisfied that some action should be taken, respectfully recommend that the Association appoint a committee, representing different parts of our State, of whom our President (Dr. Thackston) shall be the chairman, to prepare a bill relative to this subject, to be presented if possible, to the present Legislature for their action.

Dr. Wood thought that the time had not yet come for this sort of action, we want better organization, and the position this resolution commits us to is not practicable. It would be a disastrous thing to go before the Legislature in this matter and fail; better than that, that we should not undertake it. The medical profession tried to get legislative protection and failed. We want better organization, we want the name and the support of every dentist in the State. We should get these dentists to see their legislators, and there is hardly time for this this winter.

Dr. Scribner. We have waited for years for organization and it has not come; it seems further off than ever. We had better go on now, for no good will come of waiting.

Dr. Perrow said that something like this was moved eight years ago, and it was said then that we must wait for the medical men. As for the legislators they had been talked with, a good many of them, and they were willing to do what we want, so that we do not involve the State in any expense. This is the best time now, as the Legislature will probably not meet again for two years, As the law stands now any one who takes out a license can practice.

The subject was discussed further by Drs. Thompson, Hodgkin and Wood, when the resolution was adopted and the Association adjourned till the next day.

THIRD DAY.—MORNING.

The Association, Dr. Thackston in the chair, reassembled at half past ten A. M., and after the routine business, a report on Mechanical Dentistry was read by Dr. Perrow.

Dr. Moore made a verbal report, stating that there was nothing new to report, unless it be on the subject of the Soft Rubber Discs, which were so extensively advertised, and which he regarded as humbugs. He expressed the conviction that celluloid was a more agreeable base than vulcanite, but not so durable.

Dr. Chewning said he thought that most of the dentists if they were on good terms with the Goodyear Dental Vulcanite Company, would prefer rubber to celluloid.

Dr. Johnson remarked that, for himself, he was unfortunately in the clutches of Bacon, and as a consequence, had gone back to metallic bases. His patients were, however, no losers, but rather gainers by this, as he considered metal plates were much superior to vulcanite, &c., in point of comfort as well as durability. Whenever the patient could bear the expense, he always preferred gold. He had not used celluloid for two years, but all the pieces he had made were wearing well, and giving perfect satisfaction. He thought it stronger than rubber. He had never seen a plate split. All these bases, (non-metallic) were non-conductors of temperature, and so, on that account were objectionable. He thought these plates caused more absorbtion.

Dr. Chewning wished to know if a celluloid plate removed from the mouth some little time, fitted as well on being replaced.

Dr. Henkle replied that he had not experimented in that way, but he thought that all plates should be placed in water, when out of the mouth, which would prevent warping. He had worked celluloid as soon as he could obtain plates to work, and had had no larger proportion of pieces to replace than of vulcanite. Some of his pieces, he was sorry to say, had turned miserably dark. We cannot altogether depend on it. With regard to the suits which the Celluloid Company had promised to defend, they had failed to meet his case, and he had to pay up to the Goodyear men.

Dr. Scribner said that his practice was limited mostly to young people, and as a consequence he did but little mechanical work. He preferred gold as a base. His failures with celluloid were as numerous as his successes.

Dr. Keesee stated that he had found celluloid to answer nearly every necessary purpose, and he considered it as a success, with the slight exception that some of the plates turned dark in the mouth. He had worked it exclusively for three years. One of its faults seemed to be that the bite was in some unexplained way nearly always lengthened, so as to necessitate more or less subsequent grinding of the teeth to secure perfect articulation. He asked what was the objection to Weston's metal.

Dr. Sprinkle replied that Weston's metal would not last.

Dr. Henkle said that in at least one case he had found Weston's metal superior to either rubber or celluloid. It was a desirable base in some respects, and was easily worked. All materials were liable to break.

Dr. Scribner stated that he heard a good deal said about Weston's metal, and asked the question what it was. He thought the dental profession ought not to deal with those patented nostrums, as they were responsible to their patrons for what was used, and ought not to use them without they knew what they were made of.

Dr. Keesee asked if Dr. Scribner knew the exact ingredients of the amalgam he was using?

Dr. Thackston thought of all cheap, durable materials used, Weston's metal was the best. He had tried it, and would advise the members to do so, as it had answered the purposes claimed for it. He was under the impression that block-tin was one of its principal ingredients. It was a valuable base, and was doing admirable service. Of course it will tarnish somewhat in some mouths, but he had never seen a split plate. So far as the action of the fluids of the mouth are concerned, eighteen carat gold is acted upon, and in some cases entirely disintegrated. The secretions of some mouths will destroy almost anything. Silver was the least stable of all bases. He would decidedly prefer celluloid to vulcanite.

Dr. Thompson had been using celluloid now for some years, and was perfectly satisfied with its merits. In manipulating it, he advised the use of coarse plaster.

Dr. Henkel exhibited a plaster cast, where there was contraction and recession of the superior maxilla caused by the extraction of the superior cuspids, which came in an irregular position on the outside of the arch. The diagnosis was that instead of extraction, the arch should have been spread by mechanical appliances. so as to have allowed the cuspids to have been brought into their correct position, thereby preserving the beauty of the face and to be useful for mastication.

Dr. Chewning exhibited a mode showing the irregularity of teeth, described the nature and character of the case, and the mode of treatment. A full and clear history of the case, involving its difficulties, was also made to the Association. This case was considered one of unusual interest, and was carefully examined and fully discussed by the Association.

On motion of Dr. Henkle, the report of the Committee on Mechanical Dentistry was passed by.

Dr. Thompson moved that the rules be suspended so as to appoint a committee to frame a bill to be submitted to the Legislature, as provided for in the report of Dr. Steele. Adopted.

Drs. Thackston, Henkle, Moore, Sprinkel and Thompson, were appointed the committee. Adjourned.

THIRD DAY.—AFTERNOON.

Dr. T. G. Cowardin was elected to membership in the Association..

The committee appointed to draft a petition to the Legislature, made the following report:

A bill to regulate the practice of Dentistry, and to protect the people against empiricism in relation thereto in the Commonwealth of Virginia, and providing penalties for the violation of the same.

SECTION 1.—Be it enacted, etc,—That from and after the passage of this Act, it shall be unlawful for any person, except regularly authorized Physicians and Surgeons, to engage in the practice of Dentistry in the Commonwealth of Virginia, unless said person has graduated and received a Diploma from the Faculty of a reputable institution where this specialty is taught, and chartered under the authority of some one of the United States, or of a Foreign Government acknowledged as such, or shall have obtained a certificate from a Board of Examiners duly appointed and authorized by the provisions of this Act to issue such Certificate.

SEC. 2.—That the Board of examiners shall consist of six (6) practitioners of Dentistry, who are of acknowledged ability in the profession. Said Board shall be elected by the Virginia State Dental Association at their next annual meeting, as follows: Two shall be elected for one year, two for two years, and two for three years; and each year thereafter, two shall be elected to serve for three years, or, until their successors are elected. The said Board shall have power to fill all vacancies for unexpired terms, and they shall be responsible to said State Dental Association for their Acts.

SEC. 3.—That it shall be the duty of this Board :

First.—To meet annually at the time and place of meeting of the Virginia State Dental Association, and at such other time and place as the said Board shall agree upon, to conduct the examination of applicants. They shall also meet for the same purpose at the call of any four members of said Board, at such time and place as may be designated. Thirty days notice must be given of the meetings, by advertising in at least two of the daily papers published in the Commonwealth of Virginia.

Second.—To grant a certificate of ability to practice Dentistry, which certificate shall be signed by said Board, and stamped with a suitable seal, to all applicants who undergo a satisfactory examination, and who receive at least four affirmative votes.

Third.—To keep a book in which shall be registered the names, (and qualifications of such, as far as practicable,) of all persons who have been granted certificates of ability to practice Dentistry under the provisions of this Act.

Sec. 4.—That the book so kept shall be a book of record; and transcripts from it certified to by the officer who has it in keeping, with the seal of said Board of examiners, shall be evidence in any court of this Commonwealth.

Sec. 5.—That four members of this Board shall constitute a quorum for the transaction of business, and should a quorum not be present on any day appointed for their meeting, those present may adjourn from day to day until a quorum is present.

Sec. 6.—That any person who shall in violation of this Act, practice Dentistry in the Commonwealth of Virginia, shall be liable to indictment in the Circuit, County, or Corporation Courts, and on conviction shall be fined not less than fifty, or more than two hundred dollars; Provided, That any person so convicted shall not be entitled to any fee for services rendered, and if a fee shall have been paid, the patient, or his or her heirs may recover the same as debts of like amount are now recovered by law.

Sec. 7.—That all fines collected shall inure to the public school fund of the County or Corporation in which the prosecution occurs.

Sec. 8.—That nothing in this Act shall apply to persons who shall have been engaged in the continuous practice of Dentistry in this Commonwealth for three years or over, at the time of, or prior to the passage of this Act; but such practitioners shall be entitled to a certificate without examination by said Board.

Sec. 9.—That to provide a fund to carry out the provisions of the third section of this Act, it shall be the duty of the said Board of Examiners to collect from those who receive the Certificate to practise Dentistry, the sum of thirty (30) dollars each; of which sum, if there is any remaining after liquidating necessary expenses, the balance shall be paid into the treasury of the said Virginia State Dental Association and be kept as a fund for the more perfect carrying out of the provisions of this Act.

Dr. Johnston, from the Committee on Dental Literature, made a verbal report. He might have written one, but disliked writing. On motion the subject was passed, as was also the subject of Pathology, Dr. Steele having no report ready.

Dr. Wood gave an interesting account of the sufferings of a young lady from neuralgia, the diagnosis of which was obscure. A number of her teeth had been filled, and one of these was an amalgam filling in the proximal face of a molar. These fillings were all good, but he fancied that possibly the amalgam filling had something to do with it, and it was removed; but the agonizing pain, which had been persistent for eighteen months, still continued. Extraction of the molar developed the fact that calcification of the pulp was the cause of all the trouble.

Dr. Henkel related a similar experience with a tooth having a gold filling instead of amalgam.

Dr. Wood made an informal report from the Committee on Histology and Microscopy.

An essay by Prof. Hodgkin, on Life Assurance was read, and on motion the thanks of the Association tendered for the same.

The election of officers for the ensuing year being in order, the following gentlemen were elected:

President.—Dr. J. Hall Moore, of Richmond.

1*st* *Vice President.*—Dr. S. H. Henkle, of Staunton.

2*d* *Vice President.*—Dr. Geo. B. Steele, of Richmond.

3*d* *Vice President.*—Dr. Jno. W. Scribner, of Charlottsville.

Treasurer.—Dr. James F. Thompson, of Fredericksburg.

Recording Secretary.—Dr. George F. Keesee, of Richmond.

Corresponding Secretary.—Dr. L. M. Cowardin, of Richmond.

Reporting Secretary.—Dr. George H. Chewning, of Fredericksburg.

Executive Committee.—Drs. J. B. Wood and Jeter, of Richmond, and Dr. Frank L. Harris, of Harrisonburg.

After some remarks by a number of members,

Dr. Wood was appointed to conduct the president-elect to the chair, when the retiring president addressed him as follows:

Mr. President-elect,—I congratulate you upon the distinguished honor which the voice of this Association has just conferred. In making you its first and presiding officer the Association has vindicated its title to justice and judgment, and in thus honoring *you*, it has no less honored itself by illustrating its prudence and wisdom.

I take pleasure in investing you with the dignities, the privileges, and the responsibilities of your elevated position, knowing that I commit to safe and able hands the interests and objects of our organization, feeling the perfect assurance that you will be faithful to the trust and confidence reposed in you, and that you will be cheerfully aided and cordially sustained in all the duties and functions of the office to which you have been elected.

Receive, then, this badge of authority, and with it the expression of our conviction that in *your* hands it will be held "*evenly*" and wielded *worthily;* and that under your government, our Association will steadily move on to the accomplishment of its ends and objects, and to the realization of all its hopes and aims.

Dr. Moore, the newly-elected president, responded in appropriate terms, thanking the Association for the honor conferred upon him, and promising his best endeavors to promote the interest of the Association and the profession at large.

On motion of Dr. Steele, a resolution of thanks wa unanimously tendered to the retiring president, (Dr Thackston) for the faithful and efficient manner in which he discharged the duties of the office of president.

Dr. Thackston returned thanks for the compliment, after which the Association adjourned to meet on the Tuesday after the second Monday in December, 1878.

Immediately after the adjournment of the Association, the Executive Committee met and elected Dr. Jud. B. Wood chairman.

ARTICLE III.

Jottings in Operative Dentistry.

BY JAS. F. THOMPSON., D. D. S., FREDERICKSBURG, VA.

[Read before the Virginia State Dental Association, Dec. 12, 1877.]

As chairman of the Committee on Operative Dentistry, I have felt it my duty to make a report of some sort to this Association, and as the time at my command has not allowed me to write an elaborate thesis on any one subject, I have thought that instead of a more extended effort in one field, I would make a few jottings of ideas occuring in relation to subjects directly connected with practice, trusting I may be excused for the somewhat desultory character of this hastily prepared paper.

I commence with a subject, the discussion of which has filled volumes.

Let us take our stand beside our chair armed with all the nerve force which any operation may call for, for dentists should have a good share of nerve force and to spare; for who has not felt at the end of an hour or two of work over a nervous patient that exhaustion which signals excessive loss of nerve force? while perhaps only a slight fatigue would be experienced in dealing with a patient who was calm and quiet under our manipulations.

I am at a loss to attribute this effect to any other cause than want of sympathy between the patient and the operator, and in such a case would it not be well to dismiss our patient for the time, and take some other day, trusting that another sitting we may find him or her less exhausting to our nerves? For we must feel that it is well nigh impossible for us to perform perfect operations for our patients whilst in this condition of non-sympathy with them. Indeed so far true is this, that many of us are willing to confess that there is a difference in the quality of our work at different times of the day. Who has not felt in the morning satisfied in the performance of operations, which in the afternoon were beyond his ability?

But perhaps the most annoying trouble—I had almost said the greatest curse—the dentist has to deal with is sensitive dentine. Nothing in all my experience wearies me so soon as a sensitive tooth, and the question as to how we shall manage such cases as require immediate operation upon, without time for the trial of such of the numerous paleiatives as are used as temporary stoppings. For with us whose practise is largely on country patients, it is almost imperative that the operation should be completed at once. I have tried the almost innumerable remedies which have been vaunted from time to time as specifics for sensitive dentine, with but slight effect for good, one only remains to be tested -the extract of eucalyptus—and I shall try that so soon as I can get hold of the drug. The best treatment however I have found to be moral courage and sharp instruments, but these signally failed me a short while ago in the case of a very nervous patient with the most hypersensitive tooth I have ever seen. Chloride of zinc, "dental pain obtunder," aconite, iodine, all utterly failed to give any relief. The lady had heart disease, else I should have given chloroform, as she was obliged to leave town, when it occured to me to use, or to try atmospheric anæsthesia, the latest of the methods of anæsthesia and the suggestion of Dr. Bonwill, of Phila. Accordingly instructing her in the methods of breathing, she proceeded to inhale deeply for a minute or so, and I then proceeded to excavate the cavity, requesting her to keep up the profound respiration, when astonishing as it may seem, I was enabled to remove the decay and prepare and fill the cavity without special trouble.

I do not propose to discuss the subject of filling teeth, but as to the material to be used in filling, premising that we have carefully prepared the cavity, something may be said. When I am allowed, I always prefer gold, and use this under all circumstances in the anterior teeth, and I advise my patients that in the end they will find it the cheapest. A few times I have used tin for anterior teeth, but I tell you that I have lost patients by refusing to use amalgam in such cases. As to forms or styles of gold I prefer the semi cohesive, and non-cohesive. I have found that these forms of gold when condensed can be added to with annealed foil, and so the filling finished with these. I consider that they cohere as perfectly as though melted and run together, provided the cavity is perfectly dry. I am disposed to think soft foil the most reliable of the various forms of gold, as it adapts itself more perfectly to the irregularities of the cavity than any other form of foil. It is also more easily condensed laterally, pressing out against the walls and thus filling the tooth more perfectly.

And now I will tell you of something which I have successfully tried, which possibly some here present have not, and that is tin foil in combination with gold foil. I am aware that this contact of two different metals in the same cavity is contra-indicated by that bugbear galvanic action. But I have patients in whose mouths are fillings of this compound character, which they assure me have been in the grinding surfaces of these teeth for twenty-five years. The other teeth in the same mouths which had been filled with gold were badly decayed, but these were perfectly sound. To the touch of the excavator these fillings sound almost as hard as steel, and I could plainly see the different layers or alternating folds of metal. As these fillings had succeeded so well, I was determined to try this for myself, and so the first opportunity that offered I filled two large grinding surface cavities with tin and gold folded together, about two-thirds gold being used. When finished these fillings seemed about of the hardness of ordinary tin fillings. I saw them a few days ago, and they had undergone some sort of crystalline change, the character of which I am not able to explain, but they were as hard as amalgam, and preserving the teeth perfectly. I confess I should like for some one able to do so, to tell me how it is that this change occurs in these metals in combination, and what the character of the change is.

As to plastic fillings I do not hesitate to say that I use them in preference to tin, and by plastic I mean that "nasty stuff," which some fine haired dentists would not touch, but which I call amalgam. You will have some of these fine gentry stand up at associations and say that next to gold they would use tin foil, and nothing else, but if you could take a peep behind the scenes you would find a small cup of amalgam already prepared for use—on the sly. I have however the honor of the acquaintance of a gentleman a most worthy member of this association, who when I last talked with him had never used amalgam, and I give him the credit of saying that I believe his statement to be true though I am sure he has lost money by it. The best amalgam I have used is the "standard alloy," made by Eckfeldt and Dubois, of Philadelphia. I will conclude my remarks on amalgam by saying that I recently saw a filling of this material—a large one—which had effectively preserved a tooth for thirty years.

In finishing fillings we all find the dental engine an indispensable instrument now-a-days. It is not however so useful in proximal as in crown fillings. For the former I have been for some time in the habit of using emery tape as advised by Dr. M. H. Webb, but I find of late that fine sand-paper is better than the emery and has the merit of being cheap. It has performed this part of the work more satisfactorily than anything of the kind I have used.

The removal of salivary calculus is a more important operation than is usually esteemed by practitioners. I do not think we have to deal with a more destructive disease than the inflammation produced around the necks of the teeth by tartar. The peculiar disease attendant upon this combination of affairs called "Riggs' disease," from the fact I suppose that that gentleman has been so successful in its treatment, seems best managed by a surgical operation on the alveolus, removing the border of dead or dying bone with instruments of a peculiar shape, some of which I here exhibit.

It is hardly worth while for me to touch the subject of replantation of teeth. It is a practice I have looked for. ward with much interest to its being brought to perfection. At a previous meeting of this association the subject was discussed by several members and their various success given. I have seen some cases of long years standing as proofs of its practicability,—one I am familiar with in the mouth of the laté lamented Preston Welford, M. D., who so nobly gave his life a martyr to duty, dying of the yellow fever at Fernandina, whither he had gone as a volunteer physician. The tooth in question was extracted and replaced in 1854, and was in service at the time of Dr. Welford's death. And I have the record of another case—an old lady of 82, who said she had extracted a tooth forty odd years ago, for a negro man, a lower jaw tooth at that, and getting out the wrong tooth,—a sound one,— she put it back again, and it grew strong and solid and remained a useful organ to the day of his death.

The last scene which ends the strange and eventful history of our teeth, or rather those of our patients, for however we may haul out theirs, we are shy of loosing are own, —extraction. We all know that this is an operation as much calculated to unnerve a patient almost, as any other upon the human body, and every agency that science can call to its aid for the purpose of alleviating the pain incident to this operation should be used. It is through the practice of our noble and humane profession that the blessings of nitrous oxide and ether, which last paved the way for chloroform, have been given to mankind. In bringing these hastily collected jottings to a close I feel that they would be imperfect, did I not mention a method of local anæsthesia which I can best give in the words of the newspaper from which I cut it:—

A PAINLESS OPERATION IN DENTISTRY.—Dr. R. E. Moore tried an experiment on a patient at Dr. Farmer's office a few days since which was successful in the object sought, and should excite more attention than it has heretofore. The patient seated himself to have a tooth drawn—a tooth very tight in the jaw, and much difficulty was overcome in extracting it. To relieve the pain attending the extraction Dr. Moore placed his thumbs on both temples of the patient, and we have it from the gentleman's lips that, although the tooth was broken off and the roots extracted with difficulty, the pain was almost entirely destroyed by this pressure. The theory of this we cannot fully explain, but it will present itself at once to the informed of medical and dental professions.

ARTICLE IV.

Pulp Capping Again.

BY DR. W. C. BARRETT, BUFFALO. N. Y.

My first task, when a person presents himself with an aching tooth, is to make a careful diagnosis. I enlarge the orifice of the cavity (we are pre-supposing a carious tooth,) remove all extraneous matter, and test the tooth for vitality, by injecting a stream of cold water. When satisfied that there is a living pulp, I thoroughly syringe out the cavity with tepid water, containing enough Carbonate of Soda to make it slightly alkaline. This will almost always relieve any acute pain. I then apply the rubber dam, and very carefully excavate, avoiding the removal of the cap of decalcified dentine, which perhaps covers the irritated pulp. After removing all decay, and if the pain has been but slight and recent, and there be a cover of but partially disintegrated dentine, the case is a simple one. I cover the decalcified dentine with a paste of the Lactophosphate of Lime, and upon this I place an Oxy-chloride of Zinc filling, and dismiss the patient for two or three months, at the end of which time I again apply the rubber-dam, remove the Oxy chloride of Zinc, and examine. If the softened dentine has become firm, and there is no tenderness to pressure, I cover with Oxy-chloride of Zinc, as a protection against thermal changes, and fill with gold. If, however, upon removing the temporary filling I find little or no improvement, but simply a state of quiescence, I again apply the Lacto-phosphate of Lime, and reinsert the temporary filling, dismissing the patient for another interval. This also will be nearly the course of treatment when a pulp is accidentally wounded by the instrument during excavation, though I usually interpose between this so wounded pulp and *Lacto Calcis Phos.*, some soothing emollient like Glycerine. In no such case would I further irritate the wounded pulp by cauterizing it with Creasote or Carbolic acid, whose influence could be only deleterious.

If upon my first examination, I find that the dentine immediately over the pulp is so far disintegrated as to be unfit to serve for a covering, or if there has been so much of pain as to indicate considerable or long continued inflammation, the case becomes more complicated. Removal of the thoroughly decayed dentine perhaps reveals actual exposure of pulp tissue. The first thing now is to make a more careful diagnosis, and see if there be any sloughing of the pulp. This is done by a minute examination under a magnifying glass, the cavity, of course, being kept entirely dry by means of the rubber-dam. If there be manifestly a loss of tissue, or an exhibition of pus, the superficial layer of odontoblast cells is clearly obliterated, and I can hope for no deposition of secondary dentine. A different method of treatment is in such cases demanded. If, however, the pulp chamber be normally filled with a pulp which appears vascular, and with a clearly defined margin, and not too sensitive to the touch, I commence treatment looking towards a return to health. In diagnosing the condition of the pulp when fairly exposed, I lay particular stress upon its sensibility. There is a normal and an abnormal sensitiveness. In a state of health the dental pulp has comparatively little feeling. The dentist, in such cases, is but seldom warned by the sensations of his patient of a near approach to that organ. He may quite deeply wound it with but little shrinking on his part. He may slightly puncture it without his knowledge. But when it is in an irritable and inflamed state, the patient convulsively starts at but the sweeping of a wave of air across it. A conception of the normal sensation resident in a healthy pulp is thus necessary to a clear diagnosis—a knowledge which, judging from the remarks common in the meetings of dental societies, but few dentists are possessed of. Satisfying myself from observation and trial of the dental pulp, that it is a case of simple exposure, unaccompained by sloughing, my first care is to see that every particle of debris or irritating foreign matter, is removed from its neighborhood. The next step is to attempt the reduction of the inflammation, and to forestall the effusion of serum or lymph. The borders of the opening into the pulp chamber are carefully trimmed, and the exposed surface is repeatedly washed with tepid water. It is then carefully dried, and bathed with dilute *Tinct. Aconite Rad.*, a thin coating of Glycerine or Collodion flowed over it, it is carefully sealed up with wax or a solution of Gutta Percha in Chloroform, and left for a few days quiet, directions being given to avoid the use of the tooth in mastication. If, on my next examination, the pulp is but normally sensitive, has ceased to be painful, and the irritated, inflamed condition has given way to a better state of affairs, preparatory treatment ceases; otherwise it is continued. When I judge it safe, I proceed to cap. This is a very simple operation, and consists in covering the exposed point with the Lacto-phosphate of Lime, over which is carefully flowed a thin solution of Gutta Percha dissolved in

Chloroform. The cavity is then filled with Oxy-chloride of Zinc, which is allowed to remain for three months. I then readjust the rubber-dam, and carefully remove a part of the Oxy-chloride of Zinc, so as to expose the periphery of the cavity. If that portion of the dentine which is over the cornua of the pulp be normally sensitive, it is sufficient indication that the desired result has been reached, and I fill with gold, leaving the main body of the Oxy-chloride of Zinc filling as a firm bridge over my capping, and my case is thus brought to a conclusion. I do not claim universal success by these means. I cannot raise the dead to life, nor can I save those pulps which are fatally stricken; but I think my practice is founded on reason, and it meets with reasonable success. When there is sloughing, or breaking down of tissue, different measures must be resorted to, which I have not now time to detail. Of course, this method of treatment presupposes free access to the cavity of decay, for the dentist who attempts the cure of any diseased tooth, without first securing proper access, and becoming master of the situation, is but a poor bungler, who deserves failure. I am careful not to irritate the pulp in any manner, for my hopes of final triumph rest upon the quiet soothing of the dis[illegible] erritory into a tranquil rest. It is, then, needless for me to say that all such empirical measures as puncturing the pulp to deplete it, find no favor with me. Any traumatic lesion can of course only complicate matters, as it produces a wound which must be healed, while the relief gained is but momentary.

The Lacto-phosphate of Lime I prepare myself, as wanted. The essentials are, a vial of Merck's Lactic Acid, another of the Magma Phosphate, which must be kept under water, and a little of the dry precipitate. On a piece of glass, place one drop of the Lactic acid; give it as much of the Magma as it will digest, and then reduce to the proper consistency by adding the precipitated Phosphate. I use this as the immediate cover to the exposed tissue, because it seems to be the most congenial, and least liable to quarrel with it. I shall be glad at some future time to relate to you my method of dealing with pulps when slight retrogradation has commenced, but I fear I have written all that you will at one time read with patience.—*Dental Advertiser.*

ARTICLE V.

Chancre of the Lip—Was it Communicated by a Dentist's Instruments?

BY C. W. DULLES, M. D., OF PHILADELPHIA.

Some time since Dr. F. F. Maury gave me the opportunity of examining a patient under his care, with the following interesting and unusual history:—A. B., a female, aged twenty-six, is a thoroughly respectable housemaid, modest in her bearing, and her character vouched for by her employer, a physician, in whose family she has been for years. She says she has never had any serious illness, and her appearance is strongly corroborative of her statement. Although aware that she has now a grave disease, she does not know its specific nature.

In the month of September, when in perfect health, she suffered with a severe toothache, for the relief of which she applied to a dentist. He put some cotton, bearing an anodyne, into a cavity in one of her teeth, and advised her to have the nerve extracted and the tooth filled. A week later she returned, and he made an application to destroy the nerve. Still a week later he completed the operation, and recommended her to have all her teeth cleaned. To this she consented, and he did it.

At this time, two weeks from her first going to him, the angles of her mouth were much irritated by stretching, and she had observed a small sore near the middle of her lower lip. This the dentist said was only a blister, and advised the application of alum to it, which she carried out. However, the effect seemed evil, and the sore developed in about ten days into an angry, indurated ulcer, half an inch long, and of a somewhat less width, with a yellowish deposit, and an accompanying enlargement of a left submaxillary lymphatic gland. The ulcer and the bubo were both, she says, excessively painful.

Her condition now attracted the attention of the physician in whose family she was serving, who diagnosed a chancre, applied locally an ointment containing the nitrate of mercury, and gave her internally iodide of potassium and iodide of mercury, combined with opium.

The disease then passed on, with malaise and fever, to a general papular eruption, and the woman came, about five weeks after first going to the dentist alluded to, under Dr. Maury's care. She was, at the time of my first examination, ptyalized; on her lower lip was an enormous chancre, surmounted by an ugly excavated ulcer, an inch and a half long by about half an inch wide, with angry-looking, indurated and everted edges, and covered with a nasty yellowish deposit. Below the angle of the left lower jaw was a large and painful bubo. She had a general but not profuse papular syphiloderm. Many of the papules were developed in her palms and soles. On inquiry and examination there appeared to be no other syphilitic manifestations.

Under treatment the ulcer was, after two weeks, reduced one-half; but there was appearing a very painful pustular syphiloderm. This began upon her shins and calves, and came afterward, though less severely, on her arms and face. Two weeks later she had a sore throat. The chancre was healing nicely. Later, this went on quite well, leaving but little loss of substance, and the bubo subsided almost entirely. The pustules, however were very troublesome. There were many of them, of various sizes and of different grades of ulceration, presenting the features of so-called syphilitic impetigo, ecthyma and rupia. Iritis seeming to threaten, instillations of atropia were used with success.

Without going further into the history, we have, then a case of syphilis, whose initial lesion was a chancre upon the lip. The important question is, how was the chancre contracted? The answer to this question involves so many delicate considerations that it may not be wise to express here a positive opinion in regard to it; but to entertain one, these points should be borne in mind: A woman of unimpeached reputation subjects herself to the manipulations about the mouth inseparable from a dentist's operations; about two weeks later there appears on her lip a lesion, the development of which is that of a typical chancre, and which is followed by other unmistakable manifestations of syphilis.

Bearing these facts in mind, whatever may be one's opinion in regard to the source of the syphilitic contagion and its manner of communication, the history of this case may well serve as a warning to all dentists, as well as to the medical profession. It will have special weight if considered in connection with the cases of inoculation from the virus of mucous patches in the mouth, recently investigated by Dr. Maury and the writer, and reported in the *American Journal of the Medical Sciences* for January, 1878, in an article entitled "Tattooing as a Means of Communicating Syphilis."

A prominent member of the dental profession in this city recently assured me he was constantly on his guard against the danger of conveying disease from one of his patients to another, keeping a special lookout for suspicious lesions. He has, he says, detected syphilitic lesions, and might, without this precaution, have inoculated them upon others. Such a course deserves to be followed by all; and perhaps it might not be amiss—if not already done—for the dental colleges to teach their pupils the diagnosis of syphilitic lesions in and about the oral cavity, impressing upon them the danger of inoculation and the means of avoiding it.—*Med. and Sur. Reporter.*

ARTICLE VI.

Cause of Dental Caries.

Mr. A. Stewart, in the *British Medical Journal*, treats this subject very correctly, as follows:—

The general prevalence of dental caries is chiefly owing to food remaining on and between the teeth after meals—from breakfast time till the following morning—when, according to custom, the teeth are brushed; brushed, but probably not cleaned, as the brush is more often used to polish the surface merely than to assist in removing what has accumulated between them. Experiments have been referred to that prove the solvent action of weak acids on the teeth; and I think it will be conceded without proof that, were portions of our ordinary food, mixed and moistened as in mastication, kept during the night at the high temperature of the mouth, the compound would be sour. It follows that dental caries must continue to prevail as now, while it is the custom to allow the food to remain in contact with the teeth all night.

The following observations show the dependence of caries on food remaining in contact with the teeth. When the teeth are wide apart food is not retained, and they generally remain free from caries. The lower front teeth are seldom attacked by caries when, as is generally the case, the spaces between are closed to the entrance of food by tartar. The backs of all the teeth, upper and lower, being kept free from food by the tongue, are seldom affected by caries. Lodgment of food takes place between the bicuspids, between the molars, in the depressions on the masticating surface of these teeth, and on the buccal walls of the molars, and these are the chief seats of caries. While mastication is performed by the molars and bicuspids, the upper front teeth remain free from food and from caries; but, when they themselves are made to do the work of lost or diseased molars, and the food gets between them, caries is certain to follow before long. Further proof cannot be required that, if no food remained in contact with the teeth after eating, they would be free from caries, unless acted on by acidity from other sources. The only indications, therefore, for the prevention of dental caries are the neutralization of acid applied to the teeth and the removal of food before it has become acid. The food should be removed after every meal, and all who have not the opportunity of doing so should not fail to remove it thoroughly every night at bedtime by rinsing, as the brush cannot be trusted to remove the food from between the teeth.

EDITORIAL, ETC.

OBITUARY.

Professor ***Henry Reginald Noel.***—Few clearer and brighter minds have ever graced the medical profession of Baltimore than that of **PROF. HENRY REGINALD NOEL**, who died at his residence, in Virginia, on the 26th day of January.

After graduating, with distinguished honors, at the University of Virginia, Dr. Noel came to reside in Baltimore, in 1858, where he quickly won for himself, in an unusual measure, the respect and admiration of the profession and the public.

At the beginning of the late war, his sympathies led him to espouse the cause of his native State, Virginia, and he at once abandoned a growing practice to accept a Surgeon's commission in the Confederate Army, where he served with marked ability, —in the Brigade of General Henry A. Wise, and other important positions,—to the close of the war. Shortly after the close of the war, Dr. Noel returned to Baltimore, and resumed the practice of medicine.

In 1865 he was elected to the Professorship of Physiology in the Baltimore College of Dental Surgery, where he soon made for himself a high reputation as a lecturer and *teacher*. He also filled the chair of Physiology in the College of Physicians and Surgeons of Baltimore for two years. Early in the Spring of 1876, his health had become so greatly impaired, that he was compelled to relinquish both his professional duties and his private practice,—retiring to his farm in Virginia, where he continued to reside until his death, last month.

As a teacher and lecturer Dr. Noel was eminently successful. His lectures were not only prepared with a most laborious and conscientious care, but were delivered with such earnest and genuine enthusiasm, as to make them doubly effective. He was gifted with the ability to express himself with a clearness and definiteness not often witnessed; and he always succeeded in inspiring his classes with an enthusiasm kindred to his own. We feel sure, there are not a few, dentists and physicians, throughout the country, who will acknowledge to a debt of deep gratitude to the teachings and example of Professor Noel.

As a member of various local medical Societies, the Medical and Chirurgical Faculty of Maryland, and the American Medical Association, and as a frequent contributor to medical and dental periodical literature, Dr. Noel was widely known to the two professions as an indefatigable worker, a profound and clear thinker, and an enthusiastic student in the science of medicine. He was specially characterized by the originality and independence of his opinions, and the vigor and earnestness with which he defended them. Although he had been suffering for the past fifteen years, from the inroads of pulmonary consumption, —to which he finally succumbed,—his ambitious nature and active energy, were superior to all bodily infirmity; and, in the intervals of a busy and exacting practice, he found time to keep himself well informed as to the discoveries and advances, not only of medical but of various cognate sciences.

To the brilliant qualities of intellect with which Dr. Noel was endowed, were added a kind, genial disposition; a frank manliness; a freedom from all little meannesses, and a brave constancy in friendships, that made him not only admired, but beloved by his colleagues, his classes, his patients, and indeed, by all with whom he was brought into contact. E. L. H.

At a meeting of the Faculty of the Baltimore College of Dental Surgery, called to give expression to their feeling at the death of Dr. Henry R. Noel, late Professor of Physiology in that School, it was—

Resolved, That in the early death of Prof. Noel the College and the members of the Faculty have lost a cordial friend; one whose warm heart and enthusiastic nature endeared him to the affectionate regard of all who knew him, no less heartily than his knowledge, wisdom and high gifts as a teacher commended him to all whom he taught.

Resolved, That in respect to his memory the usual badge of mourning shall be worn by the faculty for thirty days.

Resolved, That we tender to his family our most heartfelt sympathy in this their hour of affliction.

Neuralgia Treated with Blue Glass.—A Baltimorean gives his experience with Blue Glass as follows:

"For several years, until last spring, I suffered from neuralgia in my head and face. I had eminent medical advice, and used internal and external remedies, (quinine and croton oil,) but without permanent relief. About March last I was suffering greatly, when a friend called at my office and told me of a case of relief from blue glass, and advised me to try it. I was ready to try *anything*, and having south windows in my office I ordered twelve half panes of blue glass and had them tacked into the twelve panes of the window next my desk. I have never seen Gen. Pleasanton's book, and, to tell the truth, I had no faith in his theory, but I thought it would be a pretty feature in my office to have the glass in my window, even if it did me no good, and it cost me only about the expense of one or two consultations with my doctor. I thought little of it until I found my pains gone. I am unable to say how many days passed before I was relieved, but I can say that from that time to this I have not had a *single twinge of pain* in my head or face. I have had colds, which always heretofore brought on attacks. I was in the mountains last summer, where I always have had attacks from sudden change of temperature; and even now in this horrid weather I am so free from the affliction that I can hardly realize that I ever suffered from it.

Now, if I am asked if I believe that *blue glass* cured me, I can only answer, as the man in the Bible. 'Whereas I was blind, now I see.' And this reminds me that both my sight and hearing were effected by the attacks of pain, and that both are perfectly restored."

BIBLIOGRAPHICAL.

Vick's Illustrated Catalogue and Floral Guide, 1878. Published by James Vick, Rochester, N. Y.

This enterprising florist has issued another of his annual periodicals, profusely illustrated, which must prove a valuable guide to all interested in the Flower and Vegetable Garden. Some seventy pages are devoted to a description of all of the most beautiful and popular Annuals, Climbers, Perennials, and valuable Vegetables, &c., with full directions for their proper culture and preservation.

Several years experience with the seed furnished by Mr. Vick, proves their excellence, and the reliable manner in which this business is conducted.

An Illustrated Monthly Magazine by the same publisher, is replete with valuable information, the January No. containing a beautiful and elegant colored plate representing Phlox and Pansy. Each number will contain thirty-two pages, printed on the best paper, making for the year a volume of nearly four hundred pages, and twelve colored plates. The subscription price is but $1.25 a year; or to a club of five but one dollar each. The style in which it is embellished renders this new monthly one of the most handsome periodicals published, and is a credit to its well known author, and we are assured that it will be duly appreciated, and be abundantly successful.

Music Publications:—

From time to time we have received from F. W. Helmick, of 50 W. Fourth St., Cincinnati, Ohio, beautiful pieces of music adapted for the piano or organ. Some ten pieces are sent for $1.00, which is a remarkably low price.

Contributions to the History of Medical Education and Medical Institution in the United States of America, 1776–1876.

This is a Special Report prepared for the U. S. Bureau of Education by N. S. Davis, A. M., M. D., the Report on Public Libraries issued some months ago, being the first of the historical series intended to bring the progress of education in this Country down to the Centennial year. This work on medical education is the second subject. As there are many indications of the increase of public and professional interest in advancing the standard of medical education, this monograph will prove a valuable contribution to this purpose.

Wine in the Different Forms of Anæmia and Atonic Gout. —By M. E. Begin.

A translation from the French advocating the use of wine in these affections, especially French wines.

A Review of the Recent Theories of Nerve Action, the Use of Electricity in Medicine and Surgery, &c.—By John J. Caldwell, M. D., Baltimore, Md, 1877.

This is a reprint of several articles which have appeared in this and other Journals concerning the use of electricity and its effects upon Brain and Nerve Matter, proving a very interesting pamphlet of some twenty pages.

MONTHLY SUMMARY.

Plating of Iron and Steel with Nickel and Cobalt by Immersion.—Mr F. Stolba, in a German periodical which we should be glad to give credit to, if there were not six words and fifty-seven letters (including forty-two consonants) in its name—proposes the following simple process for nickel-plating polished iron and steel articles. To a dilute solution (5 to 10 per cent.) of as pure chloride of zinc as possible, there is added enough sulphate of nickel to color it strongly green. This is heated to ebullition in a porcelain vessel. The objects, being completely cleaned of grease, are then suspended in the liquid so that they touch each other as little as may be; and the boiling is kept up for from half an hour to an hour, water being from time to time added in place of that evaporated. The nickel is precipitated in a brilliant white layer wherever the surface of the object is not greasy or rusty. The operation can be continued for several hours if desired; but the plating will not thus be rendered much thicker.

After removing the objects, they are washed with water holding chalk in suspension, and carefully dried. They may afterward be cleaned with chalk, and they take a fine yellowish-toned polish. The chloride of zinc used should contain no metal precipitable by iron. When it cannot be obtained of sufficient purity, it may be made by dissolving zinc scraps in hydrochloric acid, and allowing the solution, containing an excess of metallic zinc, to rest, in order that the metals precipitable by the zinc may separate. Filter at the end of 24 hours, and the solution is ready for use; each portion of zinc dissolved corresponds to about 2.1 parts of chloride of zinc.

The sulphate of nickel should also be as pure as possible, and the cold solution should not precipitate when a plate of iron is plunged in it, as would happen, for example, if it contained copper. When during the operation the liquor becomes a pale green, owing to the precipitation of nickel, more sulphate must be added until the intense green is regained. When the used liquid is exposed to the action of the air, it deposits hydrated oxide of iron, coming from the dissolved metal. It should be filtered, and more chloride of zinc and sulphate added, when it may be again used.

In the same way, polished iron and steel objects may be covered with a brilliant plating of cobalt, by using a sulphate of cobalt solution. The appearance of this plating differs little from that of polished steel. The distinguishing characteristic is the light rose-colored tint. The author states that the plating wears well.—*Scientific American.*

Death from Chloroform Averted by the Inhalation of Nitrite of Amyl.—The British Medical Journal, August 18th, says: "We have received from a physician the following interesting report for publication: On the 9th instant, I was asked by a professional friend to administer chloroform to a patient of his, from whom he was about to remove a fatty tumor, situated in the left lumbar region. The patient in question was about forty-nine years of age, married, the mother of several children, of thin, spare habit, but otherwise in good health. She was nervous, and apprehensive of the result, entreating me not to give her too much chloroform. Having previously examined the heart and found all the sounds normal, I gave her about two teaspoonfuls of brandy undiluted; and after waiting a few minutes, and placing her in the recumbent posture, I commenced the administration. The chloroform I used was Duncan and Flockhart's upon the purity of which we can always depend. I poured a measured drachm upon a piece of lint, enveloped in a towel. I held it some little distance from her mouth and nose, and let her inhale slowly. My friend noted her pulse, whilst I carefully watched the respiration. The first dose did not produce any effect, and I then used another drachm, which soon caused a good deal of excitement, incoherent talking, and struggling—the patient striving several times to snatch the inhaler from my hand. This gradually subsided, and she appeared to be passing into the third stage of anæsthesia, when she made an abortive attempt to vomit, raised her head from the pillow, and, to my friend's great alarm, the pulse flickered and stopped altogether; she gave a gasp; foam gathered on her lips; her jaw became rigid; and to all appearance she was dead. I immediately withdrew the chloroform; my friend dashed some cold water on her face and pulled her tongue forward, whilst I commenced artificial respiration, after Marshal Hall's method, but without success. We then poured some nitrite of amyl on lint, and held it to her nostrils. In such emergencies, it is impossible to judge the flight of time correctly; but I should say in ten seconds there was a flushing of the face, the pulse was again felt, and, to our great joy, the all-important function of respiration was again restored, the woman being rescued apparently from the very article of death. After a time, the anæthesia seeming tolerably profound, my friend proceeded to remove the tumor, which he did in a rapid and skilful manner, whilst, as the patient grew restless, I gave an occasional whiff of chloroform. It proved to be an ordinary fatty tumor. Only one small vessel required to be ligatured The wound has since healed rapidly, and the patient has made a good recovery. In looking at the array of symptoms, I cannot help forming the opinion that, had it not been for the nitrite of amyl, this poor patient would assurely have died. I have never seen, either in surgical or obstetrical practice, any one in such imminent peril. I am thankful to say I have never witnessed a case of death from chloroform; but, from the accounts published in the medical journals, both I and my friend inferred that, in the present instance, there was syncope arising from paralysis of the heart, and that this was met by the nitrite of amyl, which, in accordance with its physiological effects, gave a direct fillip to the arrested circulation.—*Medical Record.*

Alumni Meeting.—The Annual Meeting of the Alumni Association of the Baltimore College of Dental Surgery, will be held at the College Building, on Tuesday Morning, March 5th, 1878, commencing at 10 o'clock. By order of the President.

Wm. B. Wise, D. D. S.
Cor. Secretary.

Repeated Excision of the Inferior Dental and Gustatory Nerves for the Cure of Dental Neuralgia.—In a paper read before the Detroit Medical and Library Association, Dr. McGraw relates the following case: The patient suffered from neuralgia of the lower jaw, left side. In February, 1873, Prof. Gross, of Philadelphia, trephined the horizontal portion of the bone and destroyed the nerve. This gave relief for over a year, when the pain returned in the jaw, and made its appearance, for the first time, in the tongue. In June, 1875, Dr. McGraw trephined the ramus of the jaw, and excised about half an inch of the inferior dental and gustatory nerves. After this operation pain remained absent for fourteen months, when it again returned. Acting on the suggestion of Richet, Dr. McGraw then divided the auriculo-temporal nerve, without any effect on the neuralgia. Shortly afterwards he performed the operation recommended by Prof. Gross, and removed the whole of the alveolar process of the left side of lower jaw, with a similar result. Believing that the nerves had become regenerated, he determined to divide them nearer their origins, and to tear them loose from their connections, as is frequently done with such success in neuralgias of traumatic origin. Accordingly, on September 28, 1876, the nerves were laid bare and carefully examined, but without finding any break in their continuity at the seat of the former operation. Powerful traction was then applied in the endeavor to loosen them from their attachments, but in vain, and it was found necessary to cut them, about three-quarters of an inch being removed from each. The wound healed rapidly by granulation, and up to this time there has been no return of the neuralgia.—*Detroit Medical Journal.*

Death from Inhalation of Ether.—We regret to have to record a case in which the administration of ether terminated fatally, and which occurred in the practice of Dr. G. M. Lowe, of Lincoln. The patient was a lady forty-eight years of age, who had discharged the duties of a governess in the family of Dr. Lowe, and had for some time past been suffering from cancer of the breast. A consultation was held, and the removal of the tumor determined upon. The administration of the ether was confined to Dr. Mitchinson, who had large experience in its employment.

All proper precautions appear to have been taken. Dr. Mitchinson examined the heart, and finding it rather feeble, directed the patient to take a little brandy and water. She was quite cheerful, though somewhat nervous. Half an ounce of ether was poured on the inhaler, which was placed over the mouth in the usual way. The valves were open, and gave free ingress and egress to the air. After a few inhalations the patient's face suddenly became turgid and the hands white. The inhaler was at once removed, the tongue brought forward, cold water dashed over the face, and the chest rubbed with brandy; but the breathing became stertorous, the face more and more congested, the pulse failed, there was an effort at vomiting, and death took place in a few seconds. A post-mortem was made by Mr. T. Sympson, the Senior Surgeon of the Lincoln County Hospital, assisted by Mr. T. Brook. On examining the heart, they found that it was feeble and flabby, and some of the tissue, being afterwards examined, was found to have undergone fatty degeneration. The liver was firm, but the whole of its upper surface was attached by old adhesions to the under surface of the diaphragm—the muscular partition between the chest and abdomen. There was a little effusion of serum on the brain. The air cells of the lungs were dilated. The valves of the heart were in a perfectly healthy condition. They also carefully examined the throat, and found nothing there to throw light on the cause of death. The stomach was perfectly healthy; the deceased had not partaken of any food for some time before the ether was administered, which is a point of great importance. Mr. Sympson attributed the fatal result to failure of the heart's action, and the impairment of the functions of the diaphragm in consequence of its attachment to the liver. The fibres of the heart were so feeble as to be unable to bear any extra strain, and the efforts at resuscitation proved abortive owing to the failure of the functions of the diaphragm. Mr. Brook's evidence was to the same effect. They noted, in addition, that the right side of the heart was gorged with blood, that the walls of the right ventricle were very thin, and that there were some nodules of cancer in the liver and lungs.—*Lancet.*

Nitric Acid for Hoarseness.—Dr. W. Handsell Griffiths (*Canada Medical Record*) says that a few drops of nitric acid in a glass of sweetened water, a couple of times a day, will be found an excellent remedy for the hoarseness of singers. One of the largest fees ever received by him—so he says—was for this prescription.—*Detroit Med. Journal.*

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ARTICLE I.

The Effect of Anæsthetics upon the Human System, as Evidenced by Spectroscopic Observations.

BY DR. S. WATERMAN, OF NEW YORK.

Read at a meeting of the American Dental Convention, the Southern Dental Association and the Dental Society of the State of Maryland, and District of Columbia, in joint session at Oakland, Maryland, August 16, 1877.

MR. PRESIDENT, OFFICERS AND MEMBERS OF THE CONVENTION, LADIES AND GENTLEMEN:—There is probably no difference of opinion in the medical profession, that a perfect anæsthetic, one possessing all the requisite properties to insure rapid action, complete safety and freedom from pernicious after effects, combined with cheapness and readiness in its preparation, would be one of the greatest boons to suffering humanity. And I am also certain that there exists no difference of opinion amongst us to-day, that we do not, as yet, possess this boon; that none of the anæsthetics known to us at present, possess all these priceless properties, and that, in dealing with these subtle agents, we are indeed, passing the border land which separates life from death. I think it must be conceded that all anæsthetical agents now employed are more or less dangerous to health and life, and their employment is beset with more or less grave consequences. In estimating the effects of an anæsthetic upon the human system, its mode of action should be critically known before hand, not empirically only; we should be able to foretell what the action of a certain agent would be upon a given individual, by closely examining into his physical condition; and we should be fully able to appreciate the pathological states that forbid or modify its exhibition. To this end every rational practitioner is bound to understand the chemical composition of these wonderful agents, and, above all, what particular organ or fluid in the human economy is primarily effected by them; and also the precise manner of the changes which take place in the same. Those who imagine that all anæsthetics act upon the animal economy alike, and their peculiar mode of action is the same under all circumstances, have yet to learn that this is far from being the case; that on the contrary, various agents effect the system in quite different ways.

This knowledge, pregnant with the utmost importance, has become almost positive through the agency of the spectroscope. It has supplied the missing link to our chain of reasoning; the shadowy field of theories has been cleared up; the laws governing the relations of anæsthetics in contact with the blood current, have been ascertained, and rational progress has been made to insure safe anæsthetics. I have abiding faith in the progress of chemical science, that it will finally point out an agent from the almost inexhaustable material at its command, that will satisfy all ends of surgical requirements; an anæsthetic that, whilst it will annihilate temporarily all sensation, will leave consciousness and vitality intact. We are the more entitled to entertain this hope, as we are already acquainted with some agents that, when locally employed, suspend the sensibility of the parts. Rigolene is one of them, otherwise known as Pentlyn, or hydrite of amyl, a light fragrant fluid, the boiling point of which is 86° F. In the trimethylic ether we possess another remarkable agent of this class. Much of the knowledge we possess on these subjects has been supplied by the English savant, Dr. Richardson. I have clipped the following passage from his report of 1870: "In a previous report on amylene, I pointed out that its vapor, whilst it destroys sensation, does not destroy all conscious acts; and in my later observations on the action of methylic ether, C 7, H 16, O 3, the same facts have been more perfectly elicited. In several cases where I administered this ether for removing pain in surgical operations, the patients, when quite insensible to pain, were so conscious that they were able to obey every request made of them, and in some instances were anxious to reason, stating that they knew what was going on, and arguing that they were not ready for the operation because they were sure they would feel pain. Nevertheless, in this state of mental activity, they were operated on, and afterwards, while remembering every incident, were firm in their assertion that they felt no pain whatever during the operation. One patient, who sat for the extraction of two teeth, selected the tooth to be first extracted, putting her finger on it, and afterwards re-arranging her position for the second removal. To the looker on, it seemed, in fact, as though no change in her life had occurred, yet she affirmed that she was sensible of no pain whatever; and several other less striking, but hardly less singular examples, came before me.

"We may then, I think, fairly assume, that, in course of time we shall discover manageable and certain anæsthetic substances which will paralyze sensation only, leaving the muscular power unaltered, and the mental little disturbed; and we gather from this, that either in the cerebral hemisphere there is some distinct and simple center of common sensation, which may be acted upon by certain agents without involving all the cerebral mass, or that the peripheral nervous matter may be influenced without involving those portions of the nervous system."

What Dr. Richardson here says is of the utmost importance on the subject before us. There may be cases where it may be useful, nay, necessary to suspend consciousness also, and we should be able to graduate our agent in a manner so as to push onward, to any desirable degree, without endangering the life of our patients.

Those who desire to learn more of this subject are referred to Dr. Richardson's most able and exhaustive report; and also to the highly interesting and admirable lecture by Prof. B. Silliman, Jr., of Yale, delivered to the medical class in Yale College, September 14th, 1871, and afterwards printed in pamphlet form, and in the *American Journal of Science and Art.*

I have already referred to the spectroscope, and told you that the spectral analytical test gives us most valuable information upon the subject before us. I propose now to make this assertion good. There may be many amongst my kind hearers that know all about the spectroscope, and the work it can do and has done for chemistry and celestial and terrestrial physics. Others perhaps, may have given the subject less attention. For the benefit of all and in order to give a clear and satisfactory view, I shall speak as if this interesting subject was entirely new to you.

And in the first place, what is meant by the term "spectral analysis?"

It is a scientific process in which solar or artificial light is employed, in connection with a series of prisms, to analyze organic as well as inorganic substances. The instrument employed for this purpose is called a spectroscope, and when connected to a microscope we call it a micro-spectro scope. It consists of a number of prisms within telescopic tubes, and a slit arrangement so as to regulate the admission of light, and one or more collimator lenses to gather the rays and make them parallel. Through the movable slit the light enters and passes through the prism or prisms, and through one of the telescopic tubes the colored image or spectrum passes into the observer's eye, and is appreciated by the retina. This image may also be thrown upon a white screen, a method that I would gladly resort to, had I possession of the necessary screen arrangements. You all know what happens when a ray of white light passes through a prism. It is decomposed into its ultimate constituent colored tints, forming a beautiful band called a spectrum. It contains all the colors of the rainbow, in regular succession of tints, from red to orange, yellow, green, blue and violet. We witness, also, other interesting changes. When white light passes through a prism, the emerging rays are seen to have been bent out of their course. They spread fan-like to the left and to the right. They are dispersed, and we call it the refraction of rays. The violet part of the spectrum is greatly more bent out of its course than the red part, which is less refrangible. This deflection and greater refrangibility of the violet rays, depends upon the constitution and nature of light itself, whose waves are propagated through space by a subtle fluid known as the "luminiferous ether, which fills the illimitable space and permeates every atom of matter. These ethereal waves differ in length, the longest form the extreme red part of the visible spectrum, the shortest those of the extreme violet. According to Tyndal, the length of an ethereal wave of the extreme red would require 36,918 placed end to end to cover one inch, whilst the extreme violet requires 64,631 to the inch." As the sun's light comes to us from a distance of 90,000,000 of miles, we can perceive the amazing number of waves and their inconceivable velocity, considering that these waves reach us in the short time of 8½ minutes. The number of ether impulses necessary to produce upon our retina the impression of red light, is, therefore, 451 billions per second, and in order to produce the impression of extreme violet, 789 billions are required. Impulses above, as well as below these numbers fail to make any impression upon our retina.

This is indeed a captivating chapter of physics, but I am admonished that my subject lies in a different direction, to which I am in duty bound to return.

When the light we employ for analytical purposes is artificial, say the flame of an oil or petroleum lamp, or the magnesium or electric arc light, we see the tints pass imperceptibly, one into the other, and we have what is called an uninterrupted spectrum. When, however, sunlight is used, or the light from any planet that reflects the solar light, say the light of the moon, we find that the spectral band is traversed by thousands of fine lines, some darker and broader than others; such a spectrum is called an interrupted or solar spectrum.

The inquiry into the cause of these solar lines is full of interest, but I have neither time nor space to enter fully into its consideration.

These captivating features of spectral analysis are applicable to solar and celestial physics, but are not absolutely necessary to the intense, logical inquiry before us. The lines which traverse the solar spectrum are constant, and never change position. They have been mapped by Thalen and Angstrœm and Kirchoff. Rutherford, of New York, has photographed a portion of them from the sun itself. Fraunhofer employed the most prominent of these lines for purposes of measurement as far back as 1814. He selected 9 lines in various parts of the spectrum and named them A, B, C, D, E, F, b, G, and H, and these lines are known the world over as Fraunhofer's lines. You will understand by and by how useful these lines are in spectral analysis. These 9 lines, and in fact every one of the thousands of lines that traverse the spectrum, represent some terrestrial substance in a vaporous condition in the sun; and we learn from these hieroglyphic lines, that the sun, the stars, the comets and the nebulæ, the aurora borealis and the zodiacal light, which, according to the latest view, encircles our earth as Saturn is encircled by a triple set of rings, that in short, all celestial bodies, without exception, contain substances or elements which we meet on our earth, thus bearing witness to the unity of the Universe.

The D line is produced by burning sodium ; the lines C, F, and G, are peculiar to burning hydrogen gas; the E, line is one of the most prominent iron lines; the line C, is produced by the vapors of magnesium, and the H, line is characteristic of volatilized calcium. In our inquiries these lines serve us as landmarks to register the position of bright lines and absorption bands. Scales, graduated into tens and hundreds of degrees, are also employed and placed above the spectra, dividing the color regions.

The process of making an analysis by means of the spectroscope is simple indeed. Bodies to be examined are either solids, liquids or gases. The solids are volatilized by means of heat. To this end we employ a Bunsen's burner, the electric arc, or the compound oxygen flame.

Fluids are placed before the slit of the spectroscope in suitable glass vessels, with plane parallel walls. When the rays of light pass through colored solutions, ere they impinge upon the prism, various tints are absorbed. We observe a variety of dark bands, varying in shades, in numbers and in position in the spectral regions. There are no two substances at present known, that give absolutely the same bands.

Gases are examined by means of tubes devised by Pfluecker and Geisler, and known as Geisler's tubes. They are made of various sizes and shapes, some quite fanciful. They consist of thin thermometer tubes with a bulb at each extremity, into which electrodes of platinum or aluminum are soldered. Electrodes of other metals would oxidize in the extreme heat generated. The tubes are filled with the gas we wish to experiment upon. The air pump is then applied until the 1-600 or 1-700 part of the ordinary atmospheric pressure is left. Then we pass an electric spark through the attenuated gas, which in this condition, no longer resists the passage of the spark ; intense heat is generated, and brilliant and beautiful lights emitted, of various colors, changing of course with the different gases employed.

Being able then to master the solids, fluids and gases, no known substance can escape the analytical power of the spectroscope. Every known substance modifies the spectrum in a manner specific or peculiar to itself. Some substances give only bright lines, for example the glowing gases; others give dark lines and absorption bands. Some absorb all the colors of the spectrum with the exception of a single bright line. Observe, in the subjoined diagram, the spectra of sodium and thallium. Others give a spectrum of many bright lines; compare the spectra of barium, cæsium, and rubidium.

It does seem at first sight, that the immense variety of lines and bands would lead us into inextricable confusion. A little practice will dispel this illusion however. We soon become familiar with these landmarks. The variety of the spectra, the relative position of bands and lines, their peculiar forms and outlines, differences in brightness, depth of shading of bands and their number in each instance, are characteristic enough to insure ready recognition, even by persons not accustomed to work with the spectroscope.

DELICACY OF THE SPECTRUM OR PRISMATIC TEST.

Let me say a few words regarding the extraordinary delicacy of the spectrum test, which far surpasses every other test known to us. The following example is supplied by Dr. Schellin: "Let us divide one pound of common table salt, the sodium chloride, into 500,000 equal parts. One of these minute dust particles is called a millegram. The experienced chemist is able to weigh such a minute particle only with the most delicate scales and with extraordinary care and acquired dexterity, but with this performance he has arrived at the limit of possibilities. And now ask the chemist to divide this millegram into further 3,000,000 equal parts, and he will shrink appalled from the performance of this impossible task. The human mind

cannot conceive of an object so exceedingly minute. Yet we can demonstrate the presence of such an infinitesimal quantity of sodium chloride by the spectral test. You know that this salt is ever present in nature in extremely fine division. Its never failing source is the sea ; fine particles of it are supplied to the air by the action of winds and storms and by the slower processes of evaporation, thus supplying one of the most absolutely necessary elements to life in its manifold forms and condition, and furnishing one of the most powerful antiseptics, whereby contamination of air, earth and water is prevented.

The dusting, or slapping together of a dusty book in the remotest corner of this hall will immediately produce a yellow flash in a burning candle or gas flame at this end, which when examined with the spectroscope will show most distinctly the yellow line in D, and which, as you have already been informed is the sodium line.

There is another very peculiar and highly useful characteristic of the prismatic test, to which I desire to direct your attention. You can examine a number of spectra at one and the same time, that is, you can analyze a number of substances at the same time. Take for instance, the ash obtained from the incineration of human, or animal tissues. The hydro-chlorate solution of this ash gives a splendid spectrum, the field of which shows many red, yellow, green and blue lines in various regions of a dark spectral ground. *

By careful comparison we find that these lines belong to six metals, to-wit : potassium, sodium, lithium, rubidium, cæsium, and calcium. We can give another striking example. The ashed end of a cigar, moistened with hydrochloric acid and held in the flame of a Bunsen's burner, yields the lines of sodium, potassium, lithium, cæsium, rubidium and calcium.—(*Thudicum's Report to the Privy Council*, 1876.)

Four new metals were discovered by means of the spectroscope, of very great interest to science, which would otherwise most probably have never been known to us. Bunsen and Kirchhoff discovered in the waters of Durckheim, cæsium and rubidium. In boiling down forty tuns of its mineral waters, they found 200 grains of the mixed salts of the above metals, and by the marvelous analytical powers of the spectroscope, identified these substances. (1860.) Since then these metals have been found in many other localities, especially rubidium, to which many of the most celebrated springs in Europe owe part of their curative powers. Thallium, a most important metal, was discovered by Crook, in 1861, in some of the iron pyrites and in a seleniferous deposit from a sulphuric acid factory, at Telkerode, in the Hartz. (*Roscoe.*) Reich and Richter discovered in the same way, the metal indium, (1864) on account of its spectrum, two indigo-blue lines.

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*See Diagram.

You may rightly conjecture that an instrument possessing such wonderful analytical powers, must have found application in manufactures, arts and sciences; its influences upon celestial chemistry is simply stupendous; it has completely revolutionized our views in this direction. A comparison of the dark lines of the sun and its planets, with those of Sirius, and other fixed stars shows us that the same substances known to us are present in all these. Differently arranged as those lines are in different stars, many of them are sufficiently coincident to establish their identity. When we come to examine the irresolvable nebulous mass, we obtain no longer dark lines, but bright lines only; and we learn thereby, that these bodies consist of burning gases, principally hydrogen, which is also so abundant in the sun, where, during the fire-storms raging there, it is carried up with explosive force, many hundred thousand miles, in the shape of fiery columns.

As we come down to the still lower grade of cosmic evolution, to the nebulous mass, even these bright lines diminish in number, until but a few of them remain visible. One line in F. seems to be always present, the line is nearly coincident with the hydrogen line; another seems to indicate the presence of nitrogen, and still another has not as yet been identified.

In the comets all the bright lines have disappeared. Faintly illuminated spots mark the place where, in ages to come, bright lines will appear. These spots correspond to the spectrum of carbon, and one of these comet worlds may weigh only a few hundred pounds, and may not contain more solid matter than can be stowed in one's hat.

In time to come, when the comet's cosmic dust will have been contracted and condensed, and heat and light will have been evolved, bright lines will mark its progress, and in due time again, as condensation progresses, dark lines such as we now observe in the spectrum of our own sun, in the spectrum of Sirius and that of a host of other stars, will become visible, and in many, many million years perhaps, when our own sun system shall have become old and frigid, and its light and heat shall have been dimmed and exhausted, and life has become extinct in consequence thereof, the host of nebulous bodies, now in progress of being born, will assume all the brightness of our present sun, and light up the chaos consequent upon the disappearance of our present sun-system.

I have scarcely any time left to point out the use of the spectroscope in the arts and manufacture. You must be satisfied with one example. You have heard of Bessemer steel. Steel differs from cast iron in containing less carbon. In the Bessemer process, carbon and silicon are burned out by oxygen, contained in a blast of atmospheric air, which is thrown through the mass of molten iron.

Formerly the manufacture of Bessemer steel was surrounded by great difficulty, for it is necessary to recognize the exact moment when all carbon is burned out of the iron. When this exact moment has arrived, the operation must be stopped instantly; ten seconds more or less will destroy the entire cast. The spectroscope shows this exact moment when the process is finished, and makes the manufacture of Bessemer steel at once an easy and successful task.

I think I have touched, like Ithuriel's spear, lightly upon the most salient, technical points necessary, so that you may understand in how varied a manner the spectroscope may be utilized.

We come now to its application in medicine, and I claim that its usefulness and importance here is second to none I have already mentioned.

But to understand how it can show us the effect of anæsthetics upon the human system, we must be familiar with the constitution of the blood, and learn the optic relations of this vital fluid to the spectroscope, in health and disease.

The optic phenomena of blood were not known prior to 1864, when almost simultaneously, Hoppe Seyler, in Tubingen, Germany, and Dr. G. G. Stokes, in England, investigated this subject. Stokes pointed out the fact that blood causes a peculiarly strong absorption of light in the yellow and green part of the spectrum. In order to observe this absorption well, the blood should be properly diluted, for in its concentrated state, the absorption bands between D and E, cannot be observed at all.

These two bands are beautifully dark or black, the first which is narrow, more so than the second, which is broader; both are known as the spectral bands of oxidized blood. But blood can exist in a double state of oxidation; that is, it may also exist in a state of complete de-oxidation. The oxidized blood corresponds to the arterial; the de-oxidized to the venous blood. When the blood is de-oxidized, the two bands disappear, and are replaced by one dark, broad band, known as Stokes' reduction band. This black band filling the space between D and E, appears whenever the blood is deprived of its oxygen, which it loosely binds.

This de-oxidation may be effected by mechanical as well as chemical means. The blood is then called reduced or de-oxidized blood.

We may deprive blood of its oxygen mechanically by means of an air pump, favored by heat. Chemically, blood may be deprived of its oxygen by substances which have an energetic affinity for oxygen and absorb it whenever they find it. Tin-oxydul, ammonium sulphide and others. Blood thus reduced, or de-oxidized, may be rapidly re-oxidized by shaking up the solution with atmospheric air.

The spectroscope is not idle during these changes; the reduction invariably causes the appearance of Stokes' reduction band; the re-oxidation causes the re-appearance of the two beautiful bands between D and E. The same changes take place in the living economy.

In the mean time the discovery was made that blood contained a crystallizable material called hæmato-crystalline, also hæmo-globulin and cruorine. The great practical importance of this substance must be my apology for entering more minutely into its consideration.

Hæmato crystalline is the agent through which oxygen is abstracted from the air, and loosely bound in the circulation. Take this crystallizable matter out of the blood and the residue, consisting of albumen, globuline, protagon, cholesterine, sulphur, iron, and some salts, will be quite unable to effect this attraction of oxygen. Hæmato-crystalline saturates itself in the lungs with oxygen, it carries its precious burden into the sanguineous circulation, and sustains there the energies of respiration, oxidation and oxygenation. In its course it gives up its oxygen thus absorbed, to all oxidizable tissues with which it comes in contact, and in exchange unites with carbonic acid, which through the venous circulation is brought back to the lungs for elimination, by a process not yet fully understood.—(*Hoppe Seyler*)

It must be evident to you, that so long as the hæmato-crystalline of the blood remains intact, the same in quantity as in quality, the supply of oxygen to the living economy is subject to relatively unimportant oscillations, and that with the increase or decrease of this substance, or with any change in its integrity, rises or falls the vital capacity of an individual's life.

That it is beyond any question, the hæmato-crystalline, and not any other substance of the blood which enters into and sustains the vital exchanges between the oxygen and carbonic acid, is fully proved by spectral observation. Hæmato-crystalline, artificially prepared and in solution, is able to absorb oxygen as well as carbonic acid with great rapidity. It presents two states of oxidation, the arterial and venous. It can be oxidized and de-oxidized at pleasure; it presents the same absorption bands as blood; it can be reduced, and when shaken up with air, can be readily re-oxidized. It presents the same optical changes when reduced or altered. It enters the same combinations with irrespirable gases, in short all and every chemical and optical appearance which blood presents when acted upon by chemical as well as mechanical agencies, are also observed when these agents act upon a solution of hæmato-crystalline.

Highly interesting experiments, instituted by Pfluger upon dogs, have given us information of the rapidity with which oxygen is used up in the living animal economy. This physicist, forced these animals to inhale nitrogen, which you know does not support respiration. In thirty seconds the highest point of dyspnœa was reached.

At this point some blood was abstracted, under the necessary precautions, and then tested for oxygen. It was found that its oxygen was reduced to a minimum, being 1 to 2 per cent. whilst the blood abstracted from the same animal immediately before it was forced to inhale the nitrogen, contained 18.6 per cent. of the vital gas.

As soon as the animals were permitted again to inhale the pure air, the dyspnœa disappeared and they seemed as well as ever.

You perceive, gentlemen, I have guided you gradually up the hill from which your views will become clearer and fuller. If you will but grasp these facts, presented to you, you will have no difficulty in mastering what follows.

Were it possible to observe in the spectroscope the changes taking place in the blood of such a suffocating dog, we would witness a rapid fading away of the two oxygen bands between D and E, and towards the end of the catastrophe one dark band would take their place, the reduced or de-oxidized band of Stokes; and by the time this band had obtained its full extension and its full depth of shading, poor dog Tray will have gone to his eternal hunting ground.

And here comes in the first great lesson in the administration of anæsthetics: That suffocation will rapidly ensue where anæsthetics are used, which cannot sustain respiration, or, which is still worse, abstract what supply of oxygen the blood has stored up, unless a sufficient supply of atmospheric air is permitted to be inhaled to sustain life at the same time.

The great rapidity with which the dogs experimented upon recovered, shows us that the blood itself had not been fatally injured or altered. In taking the blood drawn at the height of dyspnœa, and shaking it up with air, the spectroscope would have promptly informed us of the reappearance of the two oxygen blood bands, in full depth of shading.

To Pfluger's experiments we owe another series of important facts. The amount of oxygen contained in the animal and human blood, is 16.9 per cent. Blood-serum contains less than one per cent. The more compact and normal the blood, the more numerous the blood corpuscles are, the greater is the per centage of hæmato-crystalline, the greater is also its capacity to absorb oxygen; the poorer the blood, the smaller is its amount. One grain of hæmato-crystalline is able to bind 1.27 cubic centimetres of oxygen.

When we examine spectroscopically the blood of chlorotic persons, or that of persons who have sustained severe hæmorrhages, or who suffer from pernicious anæmia, Bright's disease, fatty degeneration of the heart, or the blood of persons in whom disease has reduced the crystallizable coloring pigment of the blood, as is the case after cholera, typhoid and other diseases, we find the bands paler, and know at once that the normal amount of oxygen is wanting in such individuals.

Here then comes in our second great lesson. In all cases, due inquiry should be made into the history of the person who is to be placed under the influence of anæsthetics, and if it is found that any of the diseases enumerated above have been present, and that the hæmato-crystalline has been reduced by disintegration and retrogressive processes, leaving your patient with pallid countenance and defective heart's action, be on your guard, for what remains of the vitalized blood, may not be able to resist the effect which your anæsthetic is apt to produce, because in these conditions every anæsthetic agent is dangerous.

Let me briefly make you acquainted with agents which permanently alter the blood. All acids as well as nearly all alkalies are such agents. With these changes we witness corresponding changes in the spectrum, quite definite and characteristic. Here you see on the diagram various spectra resulting; Hæmatin and Cruentine, Hæmatidin and Hæmin. I have no time to dwell upon their great importance in spectral analytical investigation, but will refer to them by and by.

The blood crystals of which we have so often spoken are not found in crystalline form in the blood. They are present there in solution joined to an alkali, probably to potassa carbonate, forming hæmo-globulate of potassa. (Preyer,) Hæmato crystalline is a weak acid. It can be produced pure, but its preparation is difficult. It crystallizes in rhomboid prisms of great beauty and bright red color.

AFFINITY FOR IRRESPIRABLE GASES.

Wonderful as are the functions of this crystalline material, it possesses qualities whereby destruction to life is invited and facilitated. They have an exceedingly energetic affinity for irrespirable and poisonous gases, with some of which they enter into close and inseparable combinations, thereby sacrificing their own integrity and life-supporting power for ever. Some of these irrespirable gases simply disable the hæmato-crystalline, of the blood to absorb oxygen; others consume all the oxygen of the blood to satisfy their own keen affinity for this gas; others cause a cleavage, or true chemolysis of the hæmato-crystalline, combining with its alkaline base, setting free the crystallizable material, whilst still others cause several of these effects to take place at one and the same time.

When a cleavage of the blood material has taken place, the disintegrated elements become foreign bodies and must be eliminated and carried from the system.

Preyer's experiments upon the dogs reminds you how rapidly the oxygen is consumed in the animal economy and how necessary it is to supply the defect in an equally speedy way; and you can understand how rapidly a fatal result must ensue from the action of anæsthetics which cannot supply the defect, and which in addition greedily appropriate the oxygen which the blood may have stored up and still further destroy the integrity of the hæmato-crystalline, in a manner so as to paralyse its vital functions. Some of these combinations can be obtained in crystalline form. We can thus produce the prussic acid, the carbonic oxide, and the nitric oxide hæmato-crystalline. The combinations are far more stable than the normal oxyhæmato crystals are.

When blood has once entered into a permanent crystalline union with nitrous oxide gas, we know as yet, of no chemical process to restore the resulting nitrous-oxide hæmato-crystalline to its normal condition. No electric current possesses the power to restore the primitive integrity of the blood when once brought into this fixed condition.

Recently Donders and Zuntz have demonstrated, and Podalinsky and Eulenburg have corroborated, that the hæmato-crystalline may be released from the deadly grasp of carbonic oxide by means of carbonic acid, hydrogen and oxygen, being persistently passed through a solution of carbonic oxide hæmato-cryst, so that the blood-band of Stokes and finally the two bands of oxy-hæmato-crystalline may be reproduced. Whether such a process would succeed, in case of blood saturated with nitrous oxide, whose grasp upon the oxygen of the blood is far more tenacious, is a question which cannot be answered at present.

NITROUS OXIDE GAS.

Let us begin with this gas, the so called laughing gas, the one so extensively used by surgeons and dentists, and by many considered a serviceable and harmless agent.

It has been demonstrated by Herrman and verified by Hoppe Seyler, Gorup Besanez and W. Preyer, that Nitrous oxide gas possesses a very keen affinity for oxidized blood as well as for artificial oxy-hæmato-crystalline in solution. The affinity is so strong that when a current of this gas is passed through a solution saturated with carbonic oxide hæmato-crystalline, the carbonic oxide is driven out by the nitrous oxide, which takes its place volume for volume.

When a current of nitrous oxide gas is forced through a slightly alkline solution of hæmato-crystalline, the solution looses its dichroism and assumes a slight carmoisin red color. When the solution is placed before the spectroscope we observe that in proportion as the gas exerts its influence, the two bands between D and E fade away and disappear finally altogether, and there is a moment, says Preyer, " when the spectrum is continuous."

The disappearance of these blood bands means here, as it means in other instances, disappearance of oxygen from the blood, or complete deoxidation, and unless a fresh supply is speedily furnished, suffocation must ensue.

As the action of nitrous oxide gas upon the blood solution continues, soon after the fading away of the two bands, two new bands appear, resembling the oxy-blood bands, but differing from them in position and depth of shading; they are paler and more blurred in outlines.

Please remember, in this connection, what I said to you about Stokes' reduction band. I then told you that when blood is simply deprived of its oxygen, the blood reduction band would follow the disappearance of the two oxidized broad bands; and that then, the simple contact of atmospheric air with such de-oxidized blood solution, would suffice to cause the re-appearance of the two oxygen blood bands.

But we see here, that instead of Stokes' band, two entirely new bands have made their appearance; and when such blood, saturated with the nitrous oxide, is then submitted to the action of reducing agents, the broad band of Stokes, the reduction band, can no longer be produced at all, proving that a more permanent change has taken place in the vital chemistry of the blood.

When a current of nitrous oxide gas is passed through a blood solution not made previously alkaline, still further changes take place. Here a portion of the nitrous oxide gas rapidly oxidizes, at the expense of the oxygen of the blood, and forms hyponitric acid. Preyer holds that this hyponitric acid (Unter Salpeter Sauere) unites with the hæmato-crystalline of the blood in its nascent state. Like all acids, it alters and suspends the coagulability of the blood, and initiates other important chemical and optical changes.

This event is marked by the appearance of an absorption in red to the left of D, from the 53° on Preyer's scale towards D, and another one between b and F. I look upon the appearance of this absorption in red as an indication that hyponitric acid has formed and has united with the blood. We already learned that all acids, cyanic acid excepted, cause a decomposition of the blood, and its product is hæmatine.

Now let us logically apply all these ascertained facts to our case in hand, in order to learn how this gas produces its effects upon the economy.

It deprives the blood of its oxygen, and enters into a close combination with its crystallizable material; so bound, it disables this latter to absorb oxygen from the air, or to supply it to the oxidizable tissues of the economy.

In Preyer's experiments we have seen that the dogs, when permitted to inhale oxygen at the highest stage of the dispnœa, they became rapidly as well as ever. Not so after the inhalation of nitrous oxide gas.

A certain effect upon the blood has taken place; often unimportant and transient; at other times more permanent and grave, sufficient at times, to endanger life itself.

We have also seen that under favorable conditions, hyponitric acid is formed, which causes a decomposition of the hæmato-crystalline into hæmatine, a substance which is not capable of sustaining life.

Thus we are forced to acknowledge that the application of this gas is far from being safe and harmless; that on the contrary it is pregnant with grave consequences.

"These facts," says a writer in Braithwaite's Retrospect, No. 67, July 1873, "ruthlessly destroy the infatuation, that the inhalation of nitrous oxide gas is a harmless process, a process which any man, educated or not educated, may carry on without danger of destroying life. The recent death which occurred at Exeter, on the afternoon of January 22nd, of this year, furnishes a lesson not to be forgotten. The gas was administered by Dr. F. F. Mason, for the purpose of the painless extraction of a large upper molar tooth. The lady, Miss Wyndham, was about 38 years of age, in good health. Her physician, Dr. Pattison, was present. Gas from the same source had been administered to other patients so that its quality could not be impugned. She took the gas in the usual way, without any symptoms to excite uneasiness. At the proper degree of insensibility the gas was stopped and the tooth extracted. It was not until after the operation was completed that anything unusual happened; her face suddenly became livid, and the features began to swell, and she seemed to be quite unconscious. She breathed two or three times and in a few moments her pulse ceased to beat. All attempts to restore her were fruitless."

"There was no obstruction to the air passages, and the tongue was protruded while she still respired."

"The writer continues, "From no agent have there been so many hairbreadth escapes from death as from this gas, and probably of late some persons every day have been brought within the minutest line of danger to which Miss Wyndham succumbed."

We learn the most important lesson that we have a great deal to learn before we shall have perfected anæsthetic agents,: toward such learning the re-introduction of nitrous oxide gas has been a serious check.

"Nitrous oxide gas is indeed not a true anæsthetic at all. A true anæsthetic is an agent that suspends common sensibility without, by any necessity, interfering with those organic processes on the continuance of which life depends. Nitrous oxide gas acts by suspending one of the most important of the organic processes, that of respiration. The insensibility produced by this gas, is afforded during an interval of partial death. This interval, doubtful, transient, dangerous, may allow an operator time for a short operation, and suspending the inhalation the function may return; but that it may never return the above case furnishes a lamentable proof."

This was written in 1873, and many other cases of death from this gas are since recorded. Two years previous to this, in 1871, my warnings had reached England, and had in part been published there in the *Medical Times* and *Gazette*, London, January 13th, 1872. It was a lecture delivered before the New York Academy of Medicine, in 1871. Touching nitrous oxide gas I made the following remarks: "No intelligent observer, who ever witnessed the ghastly, cyanosed appearance of persons who have inhaled this gas until its anæsthetic effects are produced, will deny that the ensemble of symptoms betokens a powerful influence upon the blood mass which continues for many hours and days. I have seen some cases where the inhalation of this gas was followed by pulmonary and cardiac disease and death. The profession at large, may yet learn to modify its opinion, regarding its freedom from danger after its application."

You may remind me that in a dental institution in New York, we are shown a gigantic roll, containing the names of many thousands who have inhaled this gas there, so far, without any direct fatal effect.

But how is it with after effects? The institution referred to keeps no record of what becomes of its patients after wards. One of my fatal cases—dying from after effects—had inhaled the gas there three or four months previous. She was a perfectly healthy woman before the inhalation, and her disease began right after it. Other well authenticated cases are not wanting to prove, that nervous disorders, of many kinds, and a train of organic diseases, follows its exhibition. Dr. Frank Hamilton, of New York, attended a case of Incurable Epilepsy, directly produced by the inhalation of this gas. Dr. F. R. Thomas, in his treatise on "Nitrous Oxide gas," says: "It resembles strongly in its effect an attack of congestive apoplexy. Many are deprived of sleep long afterwards, and complain of unremitting headaches; nor are instances rare, where, after its use, vertigo, syncope, melancholy, insomnia, convulsions, hysteria, and irregular heart's action, could be attributed directly to its use." (Dr. Geo. J. Ziegler's researches on nitrous oxide.)

Having fully pointed out to you the manner in which nitrous oxide gas effects the blood, it must serve you as a type for all those agents which deprive the blood of its oxygen, and form stable crystalline compounds with its hæmato crystalline, whereby its life function is gravely impaired, and under certain conditions forever lost.

In case of accident with nitrous oxide, our indications are confined to narrow limits. We must try to economise the still intact blood corpuscles, and by transfusion, and especially by artificial respiration, to favor a full and long supply of oxygen to sustain the little flame of life. Electricity may be used to keep up the muscular action of the heart and lungs. We may thus succeed to ozonize the accumulated nitrous oxide, and to eliminate it from the system. Porowsky has thus succeeded in some almost hopeless cases of poisoning with carbonic oxide, and the procedure seems to me well adapted also in cases of poisoning with nitrous oxide gas.

The next class effects the blood by causing a mechanical breaking up of the blood corpuscles, or a true chemolysis of blood element. This class, says Hoppe Seyler, does not effect the function of the hæmato-crystalline, but prevents oxygenation and oxidation in the tissues.

CHLOROFORM.

The introduction of chloroform into the blood current is noted for its energy and corresponding danger. Experiments, made with this agent upon the blood shows, that the hæmato-crystalline is precipitated from its solution, a gelatinous mass is formed, leaving a ghost of a stroma in the shape of empty cell walls.

Preyer says: "That the spectrum of the precipitated hæmato-crystalline is normal, and the two bands between D and E are clearly seen. The force of chloroform is therefore not spent upon the hæmato crystalline, and the mischief done must be sought in the results of a cleavage in which the hæmato-crystalline is forcibly expelled from, and exudes from the blood corpuscle. It is probable also, that it is thus forcibly separated from. the potassa carbonate. In a fatal case of chloroform inhalation, reported in the *New York Medical Record*, Sept. 1st, 1877, post-mortem examination revealed, that the immediate cause of death was found to be effusion of blood upon the brain. It will be seen that the foregoing view tallies with this pathological condition. Chloroform forms no combination with the blood in the manner nitrous oxide acid and other chemical agents of like nature do.

Chloroform possesses another characteristic that adds to its fatal influence when inhaled; it is its high boiling point, requiring a great amount of vital force, a great amount of oxygen to ozonize it and to eliminate it from the economy. It is a well ascertained fact, that in all anæsthetic agents the boiling point is of the highest consequence. The higher the boiling point the greater the probability of danger. Prof. Silliman says: "The main disadvantage of chloroform is its high boiling point, requiring a great amount of vital force to eliminate it from the body, so that it is probably never eliminated entirely by the lungs, but only with the aid of all excreting organs, any deficiency or derangement of which may consequently lead to such suppression of elimination, that the nervous system may be overwhelmed with consequent arrest of their activity." (Silliman's lecture, 1871.)

It is but fair to state, that here, also, is a great deal to learn of the mode in which chloroform spends its force in the living economy. The warning given when I spoke of nitrous oxide gas, regarding the danger to give this agent to debilitated persons, or to those laboring under organic disease, and in impoverished conditions of the blood, must find a still more grave consideration here. How the extravasated hæmato-crystalline is carried out of the system is a matter of surmise. I found very frequently sugar in the urine after the inhalation of chloroform.

Prof. Silliman thinks the best treatment in impending death, from chloroform, is the introduction of air into the lungs by artificial respiration—heated to 130° F.—by means of bellows.

ETHER.

The action of ether is somewhat different. You remember, that in speaking of the blood corpuscles I mentioned protagon and cholesterine among its constituents. Protagon is a saponified Phosphor-oleate, according to Dia-Rouon and Strecker, an emulsion of Cerebric Acid and Lecithin.

Albumen, protagon and cholesterin form the medulary part of the nerves, and their great importance to the animal economy is conceded by all. They are found stored up in animals as well as plants, and support all vital processes of germination and growth.

Formerly indeed their presence was not considered of very great importance. It was thought these substances had only a subordinate function to perform. We know now that they furnish elements for the brain, and are ever present in the primitive vital elements of the seminal fluids, the yolk of eggs and in the red as well as white blood cells.

Ether dissolves these important factors out of the blood, as well as out of vegetable seeds—such as peas, beans and lentils; it breaks up the determined constitution of the blood cells, and thus affects directly the hæmato crystalline by severing its association with potassa carbonate.

When ether is shaken up with fresh blood a gelatinous mass is formed; the bright cherry red is changed into a muddy, brown colored pigment. When this change is observed by means of a gas chamber, such as used by Stricker and Lancaster, and the spectroscope, we find that in addition to the oxyhæmato-crystalline band between D and E, there also appears a third band near C in the red part of the spectrum. (See Preyer, die Blut-crystalle, p. 146.) The band in red always denotes that grave changes have befallen the blood, and Hoppe Seyler thinks it is due to the formation of methæmoglobin.

Fortunately for suffering humanity the boiling point of ether is far below that of chloroform, and less oxygen is needed for its elimination from the system. Yet Ether has also its death roll like chloroform and other agents, less appalling it is true, but still all caution is necessary and eternal watchfulness and care.

And now the end has come, undoubtedly to your great comfort and relief. I thank you for your undivided attention during the delivery of my remarks. I hope they may stimulate thought and original investigation, and give encouragement to unceasing efforts, until the great boon to humanity "a perfect anæsthetic" is found.

ARTICLE II.

What Anæsthetic Shall We Use?

BY JULIAN J. CHISHOLM, M. D.

Professor of Eye and Ear Diseases, University of Maryland, and Surgeon in charge of the Baltimore Eye and Ear Institute.

Surgeons in all parts of the world have been much exercised of late over this most important subject, and a question of greater interest to suffering humanity it would be difficult to frame. For the past thirty years anæsthetics have been in use, and millions who have been operated upon under their benign influences attest the inestimable value of this greatest of modern discoveries. Ether, although the first introduced, had made but little headway, when Simpson, in 1847, gave chloroform to the world. It met with immediate acceptance from professional men; and within a very few months there was scarcely a surgeon of note in either hemisphere who had not used it, and extolled it in the strongest expressions of his mother tongue.

From its universal adoption the inhalation of chloroform became the precursor of every serious operation. Those who enjoyed with it quiet sleep, and who without it would have experienced intense suffering, were soon numbered by hundreds of thousands. Ever recurring wars, with thousands of wounded, gave surgeons an opportunity of using chloroform on a very large scale, which only added to the well-deserved reputation which it seemed to have enjoyed from its very introduction.

There was but one single alloy in this general jubilee. Now and then some patient would die when chloroform had been inhaled. In former times such fatal accidents on the operating table were common enough to every surgeon of large experience; but now, since the introduction of chloroform, there was an uncomfortable suspicion that in some way the inhalation was to be blamed for these fatalities; for under its life-saving influences nobody ought to die. With this impression once excited, each accident as reported and copied from journal to journal and from newspaper to newspaper frightened the public, and slowly undermined that confidence which surgeons had previously had in this anæsthetic. A strong desire was expressed to discover some kindred agent which would establish anæsthesia without danger.

For many years the ether anæsthetic had been abandoned, and was nearly forgotten, chloroform having superseded it and driven it out of use. It was now remembered that so far very few deaths had been attributed to ether, and hence this older anæsthetic began with some to take the place that chloroform had so completely occupied. At this present time ether is nearly as much used as chloroform, its votaries being irregularly distributed. With many, chloroform holds its original undisputed sway; while with others sulphuric ether is extensively used. Now that ether is being more extensively employed, deaths under its administration are being more frequently reported, and hence the question which is forcing itself on the profession for solution: viz., which of these two anæsthetics is the safer, and by what safeguards can their administration be surrounded?

The many substances for anæsthetic purposes which have been brought to the notice of surgeons in the last few years have had but a very ephemeral existence; and with the exception of nitrous oxide gas, which dentists find so useful for their momentary operations in teeth extracting, all have passed from general use. Chloroform and ether alone remain as giants combatting for superiority.

That death occasionally occurs during the administration of both ether and chloroform, there can be no question. That deaths have occurred from the inhalation of either of these potent agents, even when the purest drug had been obtained and the inhalation most carefully administered, must be equally admitted. That deaths are numerous when either of these fluids are carefully administered no one well informed believes. That deaths are often wrongfully attributed to both of these anæsthetics, every one must acknowledge; for it is found very convenient to put the shortcomings of surgeons upon these agents, so that in common with the mal-administration of anæsthetics—extreme protraction of operations, so exhausting to patients—clumsiness in the surgical manipulation, with consequent loss of blood—temerity in undertaking operations, in which, from their magnitude, no reasonable success should have been expected, are disowned in the face of the inhalation, to which death is often conveniently attributed, even when the patient dies, many hours after the operation, from causes which would have been properly named prior to the discovery of anæsthetics.

I have seen anæsthetics administered carefully and carelessly, boldly, cautiously and timidly, by those well instructed in their use, and by others totally ignorant of their action. I have seen instances in which the most serious accidents might have happened, during the inhalation, had not steps been taken to prevent them. I propose in brief to analyze those cases, amounting to many thousands which have come under my own observation, and from their careful consideration deduce rules for the guidance of the surgeon in the administration of anæsthetics, by following which safety and success in the use of these most valuable agents can be secured.

For successful inhalation, much will depend upon the mode of offering the anæsthetic to the patient. The method adopted for administering anæsthetics is simple, and is the one in general use. Should I have control of the patient for twenty-four hours before I operate, I always insist upon a fast for at least six hours prior to the inhalation. This rule, however, I am compelled to break daily. I use anæsthetics extensively in my office practice to aid in diagnosis in the ophthalmic diseases of irritable and fretful children, as well as in operations at the Eye Clinic, which, being held at one o'clock in the day, immediately after the midday meal of the working classes, often compels me to administer the anæsthetic a very short time after a full meal has been taken. Beyond the vomiting, which is very annoying to the operator, and delays the speedy completion of the surgical procedure, I have seen no bad result from it. The precaution of loosening the clothing, especially that encircling the throat, chest and abdomen, so as to facilitate respiration, I never omit.

With adults a drink of whiskey precedes the inhalation always. Children bear anæsthetics so uniformly well that in my experience no such precaution is needed with them. A towel many times folded and formed into a hollow cone *with open top* if chloroform is used, and *closed top* if ether is to be administered, makes the very best inhaler that I am acqainted with, and should be the one in universal use. A thick towel can always be obtained, can usually be had clean, and will permit the more or less ready passage of air (as folded for the special anæsthetic to be used,) without which neither chloroform nor ether can be administered with safety. In my operating case I carry several long, stout pins, known as shawl pins, for the purpose of pinning together the ends of the folded towel in cone form. These simple instruments I find equally valuable with any in the operating case.

In using Ether, the cone with closed apex, having its cavity well soaked with the fluid, is placed directly over the nose and mouth of the patient and held firmly upon the face, notwithstanding the struggles and cries for breath, until the patient becomes prostrate and insensible. While the patient is struggling to escape from what he conceives to be an attempt to strangle him, be careful to keep only the free base of the folded towel pressed upon the face, leaving the mouth and nose free in the ample cavity of the cone, which pressure has not flattened or in any way interfered with. Should the cone be flattened against the patient's nose, very ugly symptoms of suffocation may be brought about, not by the ether, but by the towel. With chloroform such a procedure as the above described mode of administering ether would properly be called a very dangerous mal-administration, and deserving of severe censure.

Chloroform must be *slowly* inhaled without causing any suffocating feelings whatsoever. Into the cone, *with both base and apex open*, is poured a small quantity of chloroform. The towel is then held at some distance from the nose and slowly approached as the effects of the drug are experienced, until the base of the cone reaches the face about the time when the patient is half anæsthetized. The upper end of the cone is always carefully kept open for the free admission of air. By commencing the inhalation with a very dilute chloroform vapor no discomfort or suffocation is experienced by the patient, and sleep soon begins to mark its approach.

Another instrument, which should belong to the operating case of every surgeon, is a broad fenestrated or ring forceps, by which the tongue can be seized without injury and forcibly drawn out without fear of slipping away or tearing into its substance. I consider this instrument an essential to the surgeon who uses anæsthetics. There is a condition often met with during the early stages of inhalation in which the irritated pharyngeal muscles draw the tongue backwards, so as to seriously impede respiration. The free use of the forceps for drawing out the tongue and reopening the air passage is all-important at this period, as it removes one of the sources of danger.

During the inhalation I watch the face more than I do the pulse, although the face, the chest movements and the pulse are all kept under constant observation. The color and expression of the face will always be a sure index of the working of the heart and lungs. As soon as sleep begins to show itself, I take away the pillow from the head of the patient, so as to insure a horizontal decubitus, which would often be seriously objected to by the patient during the sensible condition. Should vomiting show itself, the patient is immediately turned over on the side until emesis is accomplished. The anæsthetic is then resumed, although retching may still continue. I find the continued inhalation the best method for checking the involuntary contraction of the abdominal muscles.

I continue to administer the anæsthetic until I find the reflex action suspended, as expressed by absence of contraction in the lids when the eyeball is touched. Then I consider the patient ready for operation, and in a safe condition to have it successfully performed. The patient lies in deep sleep, undisturbed by any peripheral irritation. The heart and lungs, through their own nerve centres, continue to work harmoniously, uninterfered with by reflex agencies, transmitted as they would otherwise be from the peripheral nerves through the cerebro-spinal axis to these special nerve centres. While the patient escapes all pain, and the surgeon avoids all the inconvenience of movements, the patient lies in motionless sleep, undisturbed by the surgeon's knife, all the faculties essential to life being in full operation. *This is the condition which I recognize as full and safe anæsthesia.* Less than this would permit dangerous and even fatal reflex complications; more than this would be extreme narcotism, which, by suspending the influence of the nerve centres, would stop the working of the organs—the heart and lungs—which these centres, when in good order, excite. Fortunately it would require much more of the anæsthetic to bring about this suspension of the vital function—a degree of narcotism which should justly be called an overdose. Between *this excessive narcotism and the safe and thorough anæsthesia there is a broad gulf, which only the very rash and ignorant are likely to bridge.* When the patient is fully anæsthetized, the inhalation is stopped, to be renewed from time to time if the operation be tedious and signs of returning consciousness make themselves apparent.

[TO BE CONTINUED.]

ARTICLE III.

Substance of Lectures on Gold.

BY PROF. HODGKIN.

It is not a little singular that it is almost to the dentist alone that gold has any intrinsic value. True, it is used by painters and gilders, but even with them it is used only in ornamentation. As a circulating medium and as an article of personal adornment it is very largely used, but we will understand that ornaments have no intrinsic worth, and that for the purposes for which gold coin is used, any other metal would answer, did mankind but agree upon it as a common medium having a common value. To the artisan, for industrial purposes, a bit of iron or steel is vastly more useful—has greater intrinsic worth—is more valuable in itself than its equivalent weight of the precious metal, which for us so largely represents our material comfort. For gold means food, clothing, shelter, the comforts of life, the means of transportation,—in a word all that we include in living, except perhaps air, and in some cases, water.

To the dentist it is valuable not only for the purposes of life or comfort, but it has an intrinsic value—*i. e*—a value in itself, largely used in his work, as iron or brass to the artificer, as wool or cotton to the weaver, and so on. That this value is not so fully recognized in this our day of dentistry, (I might call it the degenerate day of dentistry, at least in the application of gold to dental uses,) as formerly, is a fact I am painfully familiar with; and I shall feel that it is at once a duty as well as a privilege to call your attention to some of its former uses in our profession, in the hope that its value may again be recognized, and it resume the position in dental art it rightfully claims, and which for many years it held undisputed possession.

As a medium of circulation gold is one of the oldest of the discovered metals. The earliest recorded history of the earth—the Bible—in its earlier chapters, shows us that in the primitive days of our ancestors they had discovered and made use of for personal ornamentation, this precious metal. And it seems to be understood that its use as a circulating medium was began nearly as early. Although by no means the most rare of the metals, it has held its place as the most valuable,—that is of those that are commonly known—to the present day.

It is a wonderful and curious study to us, in this materialistic day, to revert to the earlier days of chemistry, and ponder over the whimsical notions of the alchemists, those weird and mysterious sages, who in secret consult with nature, delved out so many of her closely locked secrets, and whose labors, obscure, absurd, and fantastical as they seem to our enlightened understandings, were notwithstanding, all-important to us, as laying the foundation of our modern physics; labors whose very obscurity and mystery gave their performers a distinction and eminence peculiarly their own, in the days when to be mystical was to be awed, and when all who found treasures of intellect hoarded them as closely as the miser hoards the "Aurum" of which we speak.

A blessed day, this of ours, when it is no longer the province of science to conceal, but to divulge, when no secret of nature is safe with its discoverer, but is the common property of the world of science. It is only of late, very late as to dentistry, that this is true, and we may thank our stars for living now, instead of when the dentists' secret lived and died with him, and when his laboratory was as carefully guarded as that of Paracelsus.

One of the earliest notions to be originated, and one of the most difficult it would seem to eradicate, was that of transmuration—that gold was convertible from other metals; and innumerable were the attempts at finding the "touch-stone," whose magic presence should cause the valuable yellow metal to come forth from base mercury or other substances.

The law of compensation, which ordains that even the efforts of selfishness shall result in good, evolved much that is useful in our modern chemistry out of these crude and abortive attempts at finding a magical something by whose agency transmutation could be effected. But another and higher law seemed not thus early recognized, and that is that the truly valuable, in the sense in which gold is valuable, must be comparatively scarce, and that to increase its amount indefinitely, would be to cause it to lose that value; and the failure further to recognize the fact, which we as dentists ignore too constantly and habitually, that the truly valuable must be costly,—must result from effort, labor, toil of brain and body. It is a law of the human mind, as universal and unchangeable as eternity, that men do not value that which costs them little. See, then, that you give your patients the best work; see also that they adequately recompense you for your efforts.

But I am spending too much time in these speculations and reflections, and must pass on to that which is more immediately before us. We are all probably aware that gold is usually intimately associated with quartz, and that even the gold found in the beds of the rivers and mountain streams was washed down by these streams from its quartz bed, and is accompanied by and associated with sand, which is simply pulverized quartz. But a fact we may not be so familiar with is that the gold ore from the different gold bearing districts is uniformly about the same in purity and in association with other metals. For example the gold from our own California ranges in purity from 865 to 890 per 1000 and the alloying metal is principally silver; that from Australia ranges from 933 to 982 per 1000; Russian gold is associated with iron, platinum and palladium; while the ore from Brazil is alloyed with silver and copper. Wherever we find gold we may pretty generally know its associated metals by the knowledge of the country in which it is discovered, for, as we have seen, its alloying metals are constant in the same region.

I am reminded also of another fact of importance to the refiner and assayer, and that is that gold, although found associated and alloyed with these inferior metals,—and have only mentioned a few—is always gold in a metallic form, that is to say we never find the sulphate or chloride &c. of gold. It is a royal metal, and although by stress of circumstance, or by the potent agency of heat, it may be melted and alloyed with these others, it proudly refuses to obey the chemical laws and affinities which have their free play amongst its inferiors, and preserves its identity amid all changes.

The question of the elimination of the baser metals from the gold and the obtaining it in a state of purity, is one that must engage our attention further on, and for the present we will only say that the "behavior" of the gold is materially influenced by the presence in ever so small quantity of most of the metals, and notably so by some of the baser sort.

As we see it, there seems to be but little gold. Have other nations more than we? Not as currency I mean, but as a product of national industry. Out of the bowels of the earth are brought to light and utilized invaluable stores, among these gold. As to the total production, we are informed that the whole product of the world for 1865 was 559,587 pounds, nearly two hundred and eighty tons! We would hardly have thought that, considering our own needs and poverty. Enough to load over twenty cars, and a hard pull for at least one locomotive! California gave us in eighteen years of her most prolific yield, eight hundred and thirty-six millions of dollars worth of the precious metal, while Australia in ten years yielded five hundred and seventeen milllions.

But we tire of these sums of nine figures, purely theoretical or hypothetical to us, for we wish to see something of the methods by which the gold is obtained from its quartz matrix, or its sandy river-bed.

Two properties of gold are made use of here as available in simplifying this task of separation. First the specific gravity of gold, and second, its affinity for mercury: with these two properties, and with some very simple apparatus, we are prepared for the work of gathering the shining grains which are scattered through the sand, or mingled with the quartz which we have by suitable crushing-mills, pulverized. In passing, however, it is curious and interesting to relate that gold is found not only in grains and scales, as in the sands of the streams flowing through auriferous districts, but is found in veins, and also in pieces called nuggets. Of these the largest that I have record of was found in Australia and weighed two hundred and thirty-three pounds! It was called the "Sarah Sands," whether because a female of that name was the lucky finder, or whether the male finder classed it in value with his sweetheart of that name, I have not the least idea. To find fifty-five thousand dollars in a chunk was certainly, if there be such a thing, luck These nuggets are of surprising purity, as a mass of eighty-four pounds weight, only lost a few grains in melting,—i was practically pure.

The specific gravity of gold is very great—more so tha of any other substance with which we are acquainted, excep Platinum. It is nineteen and a-half times heavier tha water. We can best form an idea of its weight by comparison with, for example, lead, which we are in the habit o proverbially calling heavy. Now the specific gravity o lead is only eleven, or in other words it is about eleve times as heavy as water, while gold is nearly twenty time as heavy. So that we see that gold is nearly twice as heav as lead. Advantage is taken of this weight to separate th gold from the sand in what are called the "washings." A simple inclined plane—a board set at a gentle slope, wit sides, making a shallow trough, and strips of wood acros the bottom about a foot apart, constitutes the simple apparatus used by the miners, at least in the more primitiv methods of work. Water is an indispensable element i this process, and times of drought are times of inactivit among the gold seekers. The apparatus is usually place in the flowing stream, and the sand, mingled with water, i poured in at the upper or elevated end. The gold sink and is caught on the cross strips, while the sand is washe out, carrying with it so much gold that it usually pays t go over these washings by a second and more complicate process.

Such in brief is gold washing, the principle being the same in all the various machines made for the purpose. We have yet to examine the process involving the other property spoken of—that of the affinity of gold for mercury.

It would be difficult to persuade any one that mercury is capable of being made solid, unless they had faith in the statements of the few who have seen it. But although none of us probably have seen this, yet we are satisfied that such a thing is possible. But curious and difficult of acceptation as is this fact, a still more curious one is that mercury is capable of making gold fluid like itself, by combination with it. These alloys,—for such they seem to be,—of gold and other metals with mercury, are called amalgams, and there are few metals with which mercury will not amalgamate. Iron is one of the few. With gold it unites readily in all proportions, the only requisite being that the two metals shall be brought into intimate contact. The gold, intermingled with the sand and other impurities, is brought in contact with mercury, and as the property of the last, as I have said, is to render the other fluid, you will see how valuable an aid the mercury is in the accumulation and gathering together of the dust and grains of gold which on account of their minuteness would otherwise be lost. The amalgamation is facilitated greatly by sodium, and in this way much of the refuse of the first workings is profitably rehandled. The mercury is readily separable from the gold by distillation, and by subsequent condensation is used over again.

Lest any of you should be captivated by the statements concerning this precious metal, and feel inclined to rush off to the Black Hills or other new-found gold territory, I assure you that of all the precarious and hazardous methods of making a fortune this is the most precarious and hazardous, and at the same time the most laborious. The Spaniards have a proverb that a gold mine yields lead, a silver mine yields copper, a copper mine yields gold; meaning thereby that the most profitable mining is copper, the next silver, and the least of all, gold. And the experience of miners seems to substantially prove this. Even should one be so lucky as to strike "pay dirt," amid that wild and reckless crowd which is allured to such places by the enticing seductions of the auriferous metal, the chances are that he would be knocked on the head by his less fortunate comrades, and his discovery prove the most costly of his life. With your excavators in dentine you will be more likely to find gold, or at least the means of getting it.

EDITORIAL, ETC.

Dr. Waterman on Spectroscopic Analysis.—We print elsewhere an exceedingly interesting and instructive article from the pen of Dr. Sigismund Waterman, of New York City, on *Spectroscopic Analysis*, and especially the analysis of blood under the action of anæsthetics. The subject is a new one, comparatively, and although but little studied in this country, is much thought of among scientific men in Europe, and it will doubtless lead to important results. The uses of the spectroscope in diagnosis of ovarian and other tumors is already recognized and utilized by Marion Sims and others, and it will no doubt come to be a common method of diagnosis in many cases not only of this sort but of blood poisoning and determination of now obscure points in medical jurisprudence. The action of nitrous oxide on the blood, if correctly stated by Dr. Waterman, is a subject of grave importance, and if true should be known not only by the dental and medical professions, but by the public generally.

Dr. Waterman is inviting correspondence with dentists and medical men on the subject of the "after effects of anæsthetics," and as observed by them, and hopes to obtain some valuable statistics. Without consulting him, we take the liberty of giving his address, and solicit for him correspondence on the above subject. Address Dr. S. Waterman, 103 West 49th Street, New York City.

Dr. Waterman has been for the past few days in Baltimore, and delivered several lectures before the Medical and Dental Schools here; the substance of those addresses are embraced in the paper we print. They were highly appreciated by those who heard them.

In this connection the paper we publish by Dr. J. J. Chisholm, Professor of Eye and Ear Diseases, in the Maryland University School of Medicine, will be read with great interest. Dr. Chisholm, it will be seen takes extreme ground in favor of chloroform, and considers that it lessens rather than increases the dangers attendant upon operations on a class of patients whose organic diseases are usually considered as contra-indicating its use. The paper is a bold one, and although not prepared to dispute its positions, we cannot but feel it our duty to caution our brethren of the dental profession against the free use of an agent, which, whatever may be its harmlessness and efficiency in the hands of medical men, has certainly a black record in the archives of dentistry. H.

Celluloid.—Dr. C. Stoddard Smith, the agent of the Celluloid Company, was in Baltimore a few days ago, and gave a lecture before the class of the Baltimore College of Dental Surgery, on Celluloid, bringing out some new points of great interest to those working that material, and enforcing those already known. He claims that Celluloid is greatly and wrongly abused by those not familiar with peculiarities, and that it is often a failure by reason of its working not being understood, and its remarkable poperties taken advantage of.

All apparatus which involves the use of dry heat he condemns as injurious to the plate, it being essential that the material be heated in a bath of some sort,—steam, oil or glycerine being equally good. Dry heat is injurious by reason of the fact that it heats the plate unequally.

Another point of importance is that the plate should be heated at a temperature of at least 270°. Plates may be moulded into shape at a lower temperature, but it requires the above mentioned heat to overcome the tendency of the celluloid to crawl, and to set it in the form it is desired to keep.

A third point of great importance is that the plate be kept under *continuous pressure* from the time it begins to soften. Unless this is done,—if it is allowed to expand or swell,—it can never be restored to its original solidity, and although a plate sound in appearance may be made; it cannot be depended on.

It is not demonstrated, Dr. S. thinks, that Celluloid welds perfectly, although it has the appearance of so doing in many cases. It is best not to depend on this ascribed property. The Celluloid Company invite correspondence with dentists, and solicits their co-operation in developing this substance. Any hints or suggestions will be thankfully received by them. They wish particularly to know if the older plates, which were of pale color (due to the incorporation of a little oxide of zinc) are thought to be better in consequence of the admixture of the small amount of mineral matter thus incorporated. H.

OBITUARY.

Dr. George T. Barker.—Died, of typhoid fever, January 10th, 1878, George T. Barker, D. D. S., in the forty-second year of his age.

Dr. Barker was born in Poughkeepsie, Dutchess Co., N. Y., March 26th, 1835, where he spent his youth and received his early education. At the age of nineteen he removed to Baltimore, Md.. and commenced the study of dentistry with Dr. Samuel Townsend, with whom he remained a year or more. In the year 1866 he removed to Philadelphia, and became an office-student with Dr. Edward Townsend. He attended lectures at the Pennsylvania College of Dental Surgery, and graduated from that institution in 1859 ; was elected professor of Dental Pathology and Therapeutics in the autumn of 1862, which position he occupied until the time of his death. He was elected Dean of the Faculty in March, 1876, which office he retained until March, 1877.

Dr. Barker was one of the original editors of the *Denta Times;* was the author of a work entitled "Instructions in Nitrous Oxide ;" was a contributor to the various dental journals; was a member of the American Dental Association, a member o the Pennsylvania State Dental Society, a member of the Pennsylvania Association of Dental Surgeons, etc. On the 26th day of April, 1860, Dr. Barker was united in marriage to Susan

Ridgway, daughter of Thomas Ridgway, Esq., of Philadelphia. A son and daughter survive him as the result of this union.

Dr. Barker was a member of the Society of Friends, and also belonged to the order of Masons.

Ourselves marching to the eternal world, it is but fitting that we loiter for a moment on the busy highway of life to record the virtues of our fallen comrade.

Dr. Barker was a man of positive character, and, like all men thus constituted, his likes and dislikes were easily recognizable and his motives liable to be misunderstood. Yet a prolonged acquaintance assured one of his frankness of disposition and his willingness to make suitable amends where wrong impressions had been conveyed.

He was a zealous worker in his profession, ever ready to defend its dignity and its advancement. As a teacher, he was able, conscientious and popular, and for fifteen years was instrumental in perfecting young men in the branches which he taught with more than ordinary ability.

As a practitioner, he was successful, enjoying the confidence of many and securing to himself a large and lucrative practice.

As a citizen, he was loyal and brave, frequently defending in public the rights of the oppressed, and seeking to alleviate the sufferings of the unfortunate. For years it had been his practice to spend evenings in our city hospitals and institutions of charity, reading and reciting popular stories for the pleasure and entertainment of the inmates. Eminently social in disposition and lively in manner, he attracted to himself a large circle of friends and acquaintances, who will profoundly lament his untimely death.

If I may venture to enter the sacred precincts of home and speak of him as husband and father, it is in that capacity that his character shone forth with greatest brilliancy. Dr. Barker's home-life was beautiful. When he crossed the threshold of home he dropped the cares and perplexities of business and entered into joyous sympathy with wife and children. His social instincts made him a companion to his family, by whom his untimely removal will be most keenly felt.

E. T. D.

John Ensor La Motte, D. D. S.—Those who were associated with the above-named gentleman in the classes of 1876-7 of the Baltimore College of Dental Surgery, will deeply regret to know that he died of phthisis pulmonalis, at his residence, Hampstead, Carroll County, Md., February 24th, aged 27 years.

Of genial, winning manners, and strictly moral habits, Dr. La Motte greatly endeared himself to the teachers under whose instruction he had placed himself; and he no less popular with the class, at whose head he stood by common consent as an operator. He graduated with peculiar honor, and stood fair to achieve eminence in his chosen profession. Gentle in his manners, pure in his morals, he made friends wherever he chanced to be. He bore his sickness with great fortitude, and with resignation saw its fatal termination approach; and though expressing himself as having hoped to win an honorable name in life, he turned without regret to the hope of a future better existence. H.

MONTHLY SUMMARY.

Unusual Action of Anœsthetics.—Dr. P. Keyser, in the *Medical and Surgical Reporter*, relates the following cases;

While I was attending Prof. von Graefe's clinic, in Berlin, a young lady of about 19 years came in, for the operation of neurotomy of the supra-orbital nerve. It was necessary to anæsthetize her chloroform being used. During which act, in the presence of the class, she passed through all the actions and emotions of coition. Dr. von Graefe called attention to this, as one of the effects, at times, of inhaling chloroform, and advised the necessity of having several present when chloroform was administered to the opposite sex.

In my clinic in the Willis Eye Hospital, in 1874, a female of seventeen years of age came to me to be operated on for strasmus convergence. She wished to be etherized, so as to prevent her feeling any pain. During the administration of the anæsthetic by the house surgeon, in the presence of several visiting students and physicians, as well as the regular clinic assistants, she, after a few minutes inhalation, began talking in the most lascivious manner, accompanied with all the actions and emotions of sexual intercourse ; and when coming out from under the deep anæsthesia, after the operation, the same hallucination and actions possessed her. When free from its influence she claimed that one of the assistants had had sexual intercourse with her. This idea was given up, however, after being assured that such was not the case, and of the number present at the operation. Some one must have mentioned the whole or part of the affair to her, for on her appearance at the next clinic day she very modestly apologized to me for her actions, saying, "that she could not help it, as she knew nothing at the time."

In the spring of 1876 I was obliged to etherize a young lady, so that I could make the operation of tearing loose posterior synechia, and during the inhalation, which was administered by my friend, Dr. Frank Fisher, the eyes became uncovered for a moment, in which time she opened them and looked staringly and frightened at me, as I sat by her side holding the pulse. She struggled to get away, and attempted to scream. Her eyes were at once covered, and the ether pushed to complete anæsthesia. After coming out from under its influence, she told the young lady friend with whom she was staying, and who was present at the operation, that "I had turned into a wild cat; she was positive of it" For ten days she was so impressed with this delusion that she would not look at me, and it was with difficulty that I could treat the eye."

Chloral for Removing Warts.—A solution containing about twenty grains of chloral hydrate to the ounce of water, is recommended by Dr. Craig as being effectual for the removal of warts. The operation is said to be painless.—*Canada Med. Record.*

The Liquefaction of Gases.—It is announced that the successful liquefaction of oxygen, which was effected at Geneva a month ago, by M. Raoul Pictet, has been almost immediately followed by the liquefaction of hydrogen and nitrogen gas and of common atmospheric air. This, it is said, was effected by M. Cailletet, in the presence of three members of the Institute of France, on the last day of 1877. Thus, no gas remains which cannot be condensed into the liquid state under an adequate pressure and with sufficient arrangements for the lowering of the temperature.—*Med. and Surg. Reporter.*

Supra-Orbital Neuralgia.—(*Dr. C. Ræse, Leipsig,* 1876, *Inaug. Dissert.*)—Says the most frequent causes of supra orbital neuralgia are malaria, syphilis, hysteria, cold and injury. Furthermore it accompanies different forms of eye affections, and in some rare cases is due to thickening of the bones of the skull, &c. Typical malarial neuralgia occurs in the young and middle aged, and men are oftener affected than women. Shoemakers, on account of their work, are peculiarly susceptible to neuralgia, but not the typical form. Typical supra-orbital neuralgia is observed in the course of cold or hysteria. The pain of supra-orbital neuralgia generally begins in the morning and lasts from half an hour to six hours. The quotidian type is exceptional. The right supra-orbital nerve is more often affected than the left, and both are very seldom affected together. The proportion of these kinds in 61 cases was 35: 18: 8. In occasional cases a glaucomatous condition and anæsthesia of the retina have been observed. The best remedies in typical cases of neuralgia are quinine and arsenic. Iron is also very useful. Among the preparations large doses of ferrum oxydatum S. hydricum have been well thought of. Hot foot baths are also beneficial, especially when the neuralgia is double. Blistering the forehead or painting it with iodine may also be tried.—*Schmidt's Jahrbucher.—Canada Medical and Surgical Journal.*

General Nervousness in the Male.—In a lecture reported in the *Medical News and Library*, S. Weir Mitchel, M. D., says: This condition is rarely mentioned in the books. It is not raised to the dignity of a disease, but sometimes it seems necessary to treat it as such: Sometimes it is ephemeral; often it is too lasting. Occasionally it is due to original defects arising at birth, and is carried to the grave. The most prominent peculiarity noticeable in this condition of general nervousness is over-excitability. A state of feeble or tardy nutrition accompanies the nervous condition. The causes are various. Among them may be mentioned enfeebling wounds, general sclerosis, exhausting fever and diarrhœa, paralysis agitans, disorders of the abdominal viscera, self-abuse, sexual excesses, and the use of tobacco.

The treatment resolves itself into a treatment of anæmia, of defects of nutrition aud assimilation, and dyspepsia; also, in a change in the daily habits of life, from indoor pursuit to outdoor life; also, into the use of drugs with moderation. Digitalis for palpitations, opium and cannibais indica are indicated in small doses where they are tolerated. Arsenic for a nerve tonic must be long continued. The bromides are useful, especially the bromide of lithia. The combination of the valerianates of quinia, zinc and strychnia is also good.—*Detroit Lancet.*

Death from Chloroform Averted by the Inhalation of Nitrite of Amyl.—*British Medical Journal* reports a case in which death from chloroform was averted by the timely inhalation of nitrite of amyl. About two drachms had been used, when the patient made an abortive attempt to vomit, raised her head from the pillow, gave a gasp, when the pulse stopped: foam gathered on her lips; her jaw became rigid, and to all appearance she was dead. Her tongue was pulled forward, artificial respiration was resorted to, cold water dashed in her face, but without success. Some nitrite of amyl was poured upon lint, and, as near as could be judged, in about ten seconds there was a flushing of the face, the pulse was again felt, and respiration was restored.—*Dental Lancet.*

Subcutaneous Injections of Chloroform.—In a note addressed to the Societe de Therapeutique (*Gaz. des Hop..*, Dec. 14,) M. E. Besnier details the results of numerous trials which he has made at the St. Louis, of the hypodermic injection of chloroform, first practiced by Dr. Roberts Bartholow, in 1874. There has been, he observed, but little published upon the subject, probably because these injections have been used only for a limited purpose (the treatment of neuralgia,) instead of employing them for the relief of every kind of pain. Their great advantage, he considers, consists in the fact that they may be employed in this manner, and thus supersede morphia, with its consequent inconveniences. No ill effect whatever, local or general, follows these injections, and yet they are efficacious. But the mode in which they are made is of importance, for, inefficiently performed (which is very commonly the case,) they may give rise to local phlegmasia. They should always be practiced in two stages, the needle being first separated and introduced, alone, so that if it happen to penetrate a vein this may be made known by the issue of a droplet of blood. When the syringe has been reapplied, in order to prevent local irritation being caused, the injection should be propelled into the hypodermis (*i. e.*, the subcutaneous cellulo-adipose layer, which varies in thickness in different regions and individuals,) which not only possesses a special tolerance and insensibility, but a very active absorbent power. If the point of the needle be very fine and sharp, it may be passed through the skin into this tissue without appreciable pain, which, however, will be felt if it be carried too far, so as to reach the muscles, etc. The needle is manœuvred with the greatest facility as soon as it has passed the dermis, its point being easily guided to any part of the hypoderm. This done, the syrine may be adapted, and the injection made, with the greatest security.—*Med. and Surg. Reporter.*

Can Twenty Grains of Chloral Kill?—This valuable medicine, like most useful medicines, is not without its dangers and drawbacks. Occasionally is recorded an account of death supposed to have been caused by an overdose. What is a proper and safe quantity to be administered at one time? A drachm would hardly be thought to be dangerous. Less than this, however, is usually enough to promote sleep. Dr. Ingalls in the Chicago *Med. Journal* gives an account of the case of a healthy woman to whom 20 grains of chloral in two doses, with an interval of an hour, were given with the intent of preventing pain in the extraction of teeth. She showed symptoms of poisoning soon after the administration of the second quantity, and in spite of remedies was dead in fifteen minutes! Why did that woman die? Could twenty grains of chloral kill? It may be doubted. But it will be well not to forget such facts as this, and always maintain due caution in prescribing a remedy of which such a result is maintained to be possible. Liebreich says that only the crystallized drug is safe. The impure preparation poisons, sometimes, and even may kill.—*Druggists' Circular.*

The Odors of Persons.—A curious contribution to neurology is contained in an article by Dr. William A. Hammond, reprinted from the *Transactions* of the American Neurological Association. It is descriptive of the peculiar odors given off by the human body in certain conditions and affections of the nervous system. Thus he tells of a young married lady, of hysterical tendencies, who, during her paroxysms, exhaled an odor of violets, which must have in some measure reconciled her husband to these unpleasant domestic occurrences. Another lady, the doctor reports on strong testimony, "during the venereal excitement, gives off a very rosaceous odor." But the peculiarity is not always thus charming. A young lady, a school teacher, subject to sick headaches, evolves at these periods, *horrible dictu*, "an odor similar to that of Limburger cheese!" Then there is the "odor of sanctity," which Dr. Hammond also touches upon, and which he does *not* identify necessarily with the agreeable ones. His study is of the most curious.—*Med. and Surg. Reporter.*

Deaths from Anæsthetics in 1877.—We have recorded in our columns, during the present year, fourteen cases of deaths under anæsthetics. Ten of these deaths were from chloroform, one from ether and nitrous oxide gas, one from methylene and ether, one from nitrous oxide gas, and one from ether and carbonic acid gas. The patient in the latter case (a man sixty-nine years of age, suffering from peritonitis,) having for about thirty seconds inspired only his expired air.—*New York Medical Jour.*

Circassian Surgery.—An English surgeon in the Turkish army writes this incident illustrating surgical knowledge among the Circassians :—"On passing the Circassian camp on my way home, I was hailed by an orderly of the Pacha, to know if I would kindly call and see a wounded officer. Of course I went, and found, among several others wounded, a very handsome young officer, with a bullet somewhere in the elbow. Attending upon him, I found a wild-looking old Circassian, who was sucking the wound, in the vain hope of thus extracting the bullet, the simplest and safest way, he assured me, of performing this operation. After this interesting experiment had been continued until the operator was thoroughly exhausted, and without, I regret to say, his labors being crowned with success, the mollah or priest, was called in consultation ; but by this time the Pacha, who was present, and who wished me to think him superior to the superstitions of his people, asked me to interfere. I did so, on the condition that I should have the officer removed to our ambulance, which that morning had come into existence, though in a very small way, it is true. To this he consented ; and, after his arrival, I put him under chloroform, and found that a good deal of sucking or enchantment would have been required to extract the ball, which had entered the ulna, and carried before it a portion of the olecranon, which was wedged firmly, together with the bullet and fragments of clothing, between the split condyles of the humerus, right into the cancellous tissue. Having cleared out all the fragments of bone, I found that a sufficiently complete "resection" of the joint had been made without my further interference; and, under the nearest approach to antiseptic measures which I have at command, in this fresh healthy air, and with the robust constitution of the patient, I hope to save him a tolerably useful arm.—*Med. and Surg. Reporter.*

Arsenic and Antimony in Vulcanized Rubber.—An article contained in No. 17 of the *Repertoire de Pharmacie*, by Mr. E. Filhol, again draws attention to the fact that much of the vulcanized rubber of the market, at least that made in Europe, contains arsenic, which may be readily extracted by means of hydrochloric acid. It may not be generally known that the golden sulphide of antimony is largely consumed for coloring vulcanized rubber. This is prepared specially for the purpose, both of a red and of an orange color, and preserves its tint even at a high temperature. Some time ago an inquiry was instituted whether dental vulcanite, colored by vermilion, was poisonous ; and the result was that it was declared innocuous. It now remains to be seen whether any dental vulcanite is colored by antimony sulphide, and what constitutional effects it produces.—*Med. and Surg. Reporter.*

Chloroform Hallucination and Alleged Rape.—A surgeon was recently indicted at the Northampton Assizes (England) for rape, while having a tooth extracted. The offence charged was alleged by the prosecution to have been committed while the prosecutrix was so far under the effect of chloroform or chloric ether as to be speechless and motionless, but not unconscious. The defence set up was that the prosecutrix was under the influence of chloroform to such an extent as to have caused her to imagine that to have been done which she described. For the defence, Dr. B W. Richardson was called, and stated from the evidence in the present case he should say that the patient had reached the second stage. The usual symptoms accompanying that stage were loss of consciousness and, in the case of women, development of any hysterical tendencies, any operation being impossible at this stage, the patient resisting and screaming if touched. It was at this period that the patient was subject to illusions. A person who was deprived of the power of motion by chloroform would, in his judgment, be deprived of the power of sight. He knew from his own personal experience that persons in the second stage were subject to delusions as to what had been done to them during the time. He gave an instance of a lady who, in the presence of himself, her father and mother, and a dentist's assistant, while under the influence of chloroform, brought a charge against the dentist who was operating upon her precisely similar to the one in the present case, and continued firm in the belief that the charge was well founded long after the influence of the chloroform had passed off, and probably still continued in that belief. The other medical witnesses who were called, and who expressed their concurrence in Dr. Richardson's evidence, were Mr. Mills, administrator of chloroform at St. Bartholomew's, Dr. Hawksley, Dr. Saundly, of Birmingham, and Mr. West, Senior Surgeon of Queen's College Hospital, Birmingham. It was stated that all the medical witnesses for the defence had come forward to give their evidence entirely gratuitously. The jury rendered a verdict of *Not Guilty*.

Moral.—Medical gentlemen should never administer anæsthetics to a female unless in the presence of witnesses.—***Med. Record.***

Iron Cement.—Powdered sal ammoniac, 2 ounces. Flowers of sulphur, 1 ounce. Iron filings, 5 pounds. Water sufficient.

Used for closing the joints of iron pipes, iron and glass skylights, etc. No more of the cement should be made at a time than can be used at once.—*The Pharmacist.*

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OF
DENTAL SCIENCE.

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ARTICLE I.

What Anæsthetic Shall We Use?—Continued.

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Anæsthetics are among the most powerful drugs of the Pharmacopœia, and must always be administered with caution. "To bring a living being to that borderland in which life in many respects so simulates death should at no time be a fool's occupation." It is a condition which the strongest hearted patient can not face without some uneasiness, and many accept with great alarm. The administration of anæsthetics should therefore be only entrusted to skilled hands, who, knowing what they have to do, will give all of their attention to the serious matter which should absorb them. Hence it is better to have as an administrator of anæsthetics a physician who takes no interest in surgical operations, and who will not have his attention for even a moment diverted from the face and pulse of his patient.

From my own experience and observation, I can readily see how there can be *seven causes for death* during the administration of anæsthetics, even when the chemically pure drugs are used, the patient being in the recumbent posture, with loose clothing, and in a proper position for its inhalation. Etherization in the sitting posture is dangerous, and should never be undertaken. May not the perfect safety with which chloroform is used in obstetrical practice depend much upon the empty condition of the stomach, the loose clothing, *and the horizontal decubitus*, which are considered the best preparation for safe inhalation, accompanied, as it always is in labor cases, with no fear of, but a longing for, the anæsthetic.

In the first place, I can understand how a cloth saturated with chloroform, and covering up the face of a patient so as to exclude air, may necessitate the inhalation of so saturated an atmosphere as to cause excessive irritation of the air-passages. This may act injuriously upon the respiration and circulation. Should a fatal result occur under this condition of faulty administration, we would not call this a death from chloroform under careful use, but its careless abuse; a result that could not occur if common precautions are taken, such precautions as every physician is expected to use who administers any of the efficient drugs of the materia medica. Should a physician intending to administer hypodermically a few minims of Magendie's Solution from a full syringe carelessly inject the entire contents under the skin, no one would attribute the blame to the morphia, but to the hand that worked the syringe. In this case life is sacrificed by carelessness in the use of a remedy known to be potent, and therefore one to be used with caution.

A second cause of death may readily occur with the early administration of both ether and chloroform. In many cases the local action of the inhaled vapor so irritates the throat as to cause contraction in the tongue muscles and a closure of the laryngeal opening by the close approach of the arytenoid cartilages and the overlapping of the epiglottis. This condition is evinced by stertorous breathing, change of countenance, discoloration of face, impeded thoracic movements, and vain attempts at thoracic expansion. The patient is threatened with asphyxia by an involuntary but successful effort at partially swallowing his tongue. Should he be allowed to remain in this condition, death will as surely take place as when one is seized by the throat and fatally strangled. If the mouth be opened, tongue caught by the tongue-forceps and drawn forcibly outwards, to one side, so as to elevate and advance the epiglottis and separate the arytenoid cartilages, thereby re-establishing the laryngeal opening, a loud, sonorous inspiration is immediately heard, air pours into the lungs, and the ominous cloud upon the face at once passes away. Should there be no forceps at hand, and the drawing out of the tongue be omitted, we would have, under these conditions, another glaring instance of death from the maladministration of the anæsthetic. A surgeon who is not prepared to protect his patient from this accident, while inhaling an anæsthetic, would have as good reasons for escaping censure as he who, after an amputation, found that he had omitted to procure the instruments necessary for securing the arteries, and hence allowed the patient to die from hæmorrhage.

A third cause of danger in the inhalation of anæsthetics resides in the inexperience of the administrator or in his inattention. I have already said that the physician who administers an anæsthetic has full occupation in the part assigned to him, and should not permit his attention to be diverted to the surgical work performed by another, and for which he is preparing the patient. I have seen instances in which the administrator of the anæsthetic, often a student of medicine, in his eagerness to follow the several steps of the operation, had become so oblivious to his responsible trust as to allow the thickly folded cloth to compress firmly both nose and mouth of the patient, who with asphyxia imminent, was too insensible and powerless to push away the obstacle and escape the threatened suffocation. Had the patient a feather pillow pressed over the face he could not be more surely suffocated than by this thickly folded towel. Many a time in doing general surgical work have I pulled the cloth from the face to the immediate relief of the respiration. In opthalmic surgery, to which my work is now exclusively confined, this accident can not occur, as the face is constantly under my observation. Had the careless administrator been permitted to smother his patient we would have had a death announced from chloroform, while a towel which had never known chloroform if applied in a similar way would have done equally efficient work. Another clear case of careless administration.

Still a *fourth cause* of death will be wrongfully attributed to the anæsthetic should it occur doing the act of vomiting. If the patient be allowed to remain upon his back during emesis, and be not rolled over upon his side or face, some of the contents of the stomach will pass downwards from the pharynx into the trachea and cause death by suffocation. Autopsies are not often thoroughly made after supposed death by anæsthetics. Usually the brain, the heart and the kidneys are examined, and possibly the stomach, liver and bladder, but not the throat and the larynx. But in one recently reported death during chloroform inhalation, in which a patient suddenly expired immediately after the act of vomiting, the larynv and trachea were found packed with food ejected from the stomach. In another recent case at the University College Hospital, London, of death following vomiting under Ether during an operation for strangulated hernia, the autopsy exhibited stercoraceous matter in the trachea and right bronchus. Again, a case of death at the hands of the careless administrator in his bad manipulation of the patient, and certainly not from the anæsthetic.

The fifth cause of death from both chloroform and ether, probably the most common of all, has been more active of late years, being rendered so by the unsettling of the former confidence which surgeons have had in the safety of anæsthetics. In their present timidity surgeons do not now push the inhalation to the degree of suspending the functions of such parts of the cerebro-spinal system as preside over the emotional, sensational, motor and reflex acts; *the only condition recognized as one of perfect safety in chloroform and ether anæsthesia.* I refer to that condition in which peripheral irritation can no longer be transmitted through the cord to the brain, and then back, by the vagus and pneumogastric nerves, to the cardiac ganglia. Any condition short of this stage of temporary suspension of reflex agencies leaves the heart exposed to those serious inroads from peripheral irritation through which its movements may be suddenly and permanently arrested. Such fatal results are identical with instances of nervous shock, so familiar to operators in former times, and then deemed a sufficient explanation of death under the circumstances. In this way can be satisfactorily classified the many deaths under anæsthetics for trivial operations, as tooth drawing, opening of abscesses, etc., when only enough of the agent was inhaled in the sitting posture to partially stupefy, but not to protect against reflex accidents from emotional or peripheral excitement.

In this class are placed those many fatal cases during the more serious operations, in which the timidity or anxiety of the surgeon, with unsettled confidence in the article he is using, induces him to *arrest the inhalation before the period of safety has been reached.* He commences the cutting operation with the vital organs all exposed to injurious reflex peripheral irritation, and under the cloak of the anæsthetic, without its protection, invites disaster. Hence it is that an operator, who has once been frightened by anæsthetics, continues to have accidents which do not occur to others who, never having seen trouble, administer the drug boldly. Timidity here must be classified with ignorance, both being dangerous negative qualifications for successful surgery. When deaths occur under these circumstances, the fatal result is not to be attributed to the anæsthetic, but, on the contrary *to the want of it;* clearly a defective administration, induced by unwarrantable and unworthy fright on the part of the operator.

Under this heading I would also class the deaths said to be occasioned by heart diseases under the inhalation of chloroform. Richardson, of London, after a critical examination of the various diseased conditions of the body, said to be hostile to the administration of chloroform, and especially after maturely considering the many varieties of heart disease, including valvular growths, vascular contractions, cardiac, hypertrophies, stenosis of heart orifices, and in fact the entire list of heart troubles, sums up his experimental observations with the following remarks: "On the whole, the only diseased condition which I could give as a warning to practitioners from exceptional danger in the administration of chloroform is the diagnostic of a dilated and weak right heart." And then states that in one such case he had forewarned the surgeon, who then gave chloroform and had a fatal result. But what guarantee have we that the patient with such a heart would not have succumbed to the operation itself? These heart conditions are so prone to syncope that anæsthetics are needed during painful operations to prevent the fatal emotional shock. In such cases we recognize the necessity for a cardiac stimulus, whiskey, which may have prevented the fatal issue.

Diseased conditions of the heart, regardless of kind, may make this important organ peculiarly susceptible to syncopetic influences when reflex action has full sway; hence we find violent emotional excitement a fruitful cause for mortality in the subject of heart disease. Many such persons having to undergo painful surgical operations in former times, before the introduction of chloroform, suddenly collapsed with the first incision; and they *still die as of old when they are not properly protected by complete anæsthesia.* Should chloroform be freely given to patients with heart disease, regardless of kind, who must submit to painful operations for the cure of some surgical affection, by its liberal use they are put in a condition of safety against all emotional and reflex annoyances, without which they could not escape trouble.

I look upon chloroform as the strong bridge which will conduct patients suffering from serious heart disease safely through serious operations. As a surgeon in large opthalmic practice, I frequently am compelled to perform the most delicate and painful operations upon the eyes of timid patients suffering from heart disease in its various forms. Cataracts occurring usually at an advanced age, most frequently between 60 and 80 years of age, are often associated with organic diseases of the heart in patients enfeebled by senility. I never refuse to give such patients chloroform; on the contrary, I urge its use. The only difference that I make in such cases over other patients is, if possible, by exercising more care in establishing the safe stage of complete anæsthesia through the liberal use of the drug. From the standpoint of my own personal experience, I know of no organic lesion which contraindicates the careful and thorough administration of chloroform.

The *sixth cause* of death during the administration of ether or chloroform is from excessive administration. No one can doubt for a moment that chloroform and ether possess toxic action, and that in common with all other active agents in medicine, the danger is dependent upon the size of the dose used; also that the dose of an anæsthetic can be made large enough to kill by enfeebling and finally paralyzing the nerve centres from which the heart and lungs draw their inspiration. This class of remedies are clearly cumulative, and when enough has been inhaled to cause the suspension of voluntary motion, sensation and reflex action, if their administration be continued, instead of being suspended, an amount can be concentrated in the circulation quite sufficient to stop respiration and the heart's action.

As I have said before, there is a broad gulf between that degree of anæsthesia which only suspends so much of cerebral action as still allows full play to the vital organs—a perfectly safe condition for surgical operations—and that fatal overdose of the anæsthetic from which there is a suppression of the cardiac centres of innervation. Surgeons often employ ignorant assistants to administer the anæsthetic who conceive it to be their duty to keep the saturated cloth to the nose of the patient, and they know no stopping point. They are told to give the ether, and they show neither judgment nor discretion. Unless watched by the surgeon, whose attention should be concentrated elsewhere, they go on applying the vapor in spite of complete narcotism. Fortunately, the elimination of the gas from the blood through the lungs is so rapid that by removing the towel a very few expirations will reduce the amount in the system to a safe standard and dissipate the threatened danger. When through this overdose the vital functions are suspended, the killing should be put to its proper cause—an overdose through ignorance; another clear case of mal-administration.

The *seventh, the only legitimate and rarest of all causes of death from anæsthetics*, now faces us. It is that unknown condition called idiosyncrasy, in which anæsthetics show themselves poisons of extreme activity. The patients who carry about with them this innate fatality exhibit it by no recognized signs. When such persons die from the toxic inhalation, the autopsy reveals absolutely nothing to indicate the destructive effects of the poison.

The effects of anæsthetics, says Claude Bernard, depend on the immediate influences exerted by the drug upon the sensitive elements of the nerve centres, in virtue of which their properties are temporarily suspended. In cases of idiosyncrasy, these functions, so essential to life, become permanently suppressed, and yet, with the death of the individual, the changes in these nerve elements are of such a nature that so far they have altogether escaped detection by pathological investigators.

We call the practice of medicine empirical, because every dose of medicine we administer to a patient for the first time is more or less an experiment. We cannot in advance say that because a drug is expected to act in a previously established way it will do so in the case before us. The every-day experience of physicians teaches them not to be surprised if now and then they should obtain from drugs diametrically opposite results from those looked for, and very often intensity of action not at all commensurate with the very small dose administered. I have known opium to produce intense pain; it is the common remedy to allay it. I have known Dover's powder to purge violently, a similar effect to be repeatedly produced from a few grains of quinine or a single dose of bromide of potassium. I have known one-half grain of iod. pot. to cause a most distressing coryza, and a fragment of a grain of mercury to excite the most profuse ptyalism. On one occasion in an old lady under my care, one single drop of Fleming's tincture of aconite, brought on prostration that nearly proved fatal. How often a single moderate dose of the narcotics in constant use has put the patient under the sod, the grave alone can tell. To the world without the death is always attributed to the disease for which the dose has been judiciously prescribed. The administration of the remedy was based upon the great good that it had accomplished in controlling these very symptoms in thousands of cases. The idiosyncrasy of the individual in these special instances was the immediate cause of the fatal issue; a condition which could not have been foreseen, and therefore no precautions could have guarded the physician against it. In these cases, which can not be very rare, from the variety and number of potent drugs used by practitioners, the fatality following the dose administered is often not recognized, even by the medical attendant. The patient died when the symptoms of the disease had not indicated so serious or so sudden a result, but the reason why, most physicians do not consider.

From the exclusive use of any one potent remedy the idiosyncrasy must be rare, so that in taking one, say opium, a powerful drug most extensively used by every physician, and applicable to most of the diseases to which the human subject is liable, peculiarities in constitution, exhibiting dangerous symptoms from comparatively small doses, are only now and then met with. When we contrast as to frequency cases requiring serious surgical operations, against the many little and great disturbances of the various organs of the living economy brought to the notice of the physician and requiring the use of opium, we find the surgical cases in the ratio of scarcely one to a thousand. Now take such a remedy as chloroform, only used by surgeons in these serious surgical cases, and hunt up idiosyncracies for this drug. Their occurrence must be so very rare that a surgeon of very large experience is not likely to see more than one fatal case in a long life devoted to surgical practice; and a great many surgeons of very large experience have never met with one. Syme, whose surgical career in Edinburgh is known to every one in the profession, was so uniformly successful with anæsthetics, never having lost a patient from the inhalation, that he adopted this axiom, "Show me a case for operation, and I will show you a case for chloroform." At the Edinburgh Infirmary, during a period of 28 years from the introduction of chloroform into surgical practice to the present time, only two deaths have been attributed to chloroform, which, according to Ker, is one death in 36,500 administrations. Grant, in his admirable Treatise on Surgery, says: "I have seen chloroform given in some thousands of cases during upwards of twenty years, both in hospital and private practice, without a single death, or even an approach to a fatal termination." Elser, of Strasburg, had used chloroform 16,000 times, and had never seen a fatal case. Kidd, of London, had seen it administered upwards of 10,000 times, and had seen no fatal case, either in his own practice or that of his friends. The French surgeons in the Crimea reported 30,000 cases of chloroform administered and not one fatal issue. In the English army in the Crimea chloroform was administered 12,000 times with one single death reported as attributed to it. In the Confederate service chloroform was exclusively used in a great many thousand operations without a death, as far as I am aware of, or have been able to ascertain after diligent inquiry among leading surgeons of the army. Surgeon McGuire, of Jackson's corps, reported 18,000 administrations without one death. Richardson had seen it used in the London hospitals 15,000 times before he met with the first fatal case. Billroth, of Vienna, had administered chloroform 12,500 times before he met with his first accident. Clover has recorded 3,000 administrations without a single death. Erichsen has only witnessed one single death under chloroform in 25 years at University Hospital. No official statistics, that I am aware of, have been published of the uses of chloroform in the Federal army, nor in the recent wars of the French, German and Austrain empires. Dr. J. Mason Warren, in 1867, published his "Surgical Observations, with Cases and Operations," in which he mentions that in the Federal army chloroform was almost exclusively used in field operations. "The returns indicate that it was administered in no less than 80,000 cases. In 7 cases fatal results had been ascribed with apparent fairness to its use," a proportion of 1 death in 11,428 administrations. Enough has been already said, however, to prove that under careful administration, deaths from chloroform must be among the rarest of accidents—so very rare that it should not be seriously considered.

To the testimony above I will add my own individual experience. I have been practicing surgery twenty-five years, and have used chloroform largely during that entire period in private and hospital practice, in the army as well as in civil life, and have administered it to the extent of fully 6,000 cases. For some years I have administered it on an average of at least once every day. I have given it to the very young and to the very old; to the very strong as well as to the very weak; to the healthy as well as to the extremely diseased, regardless of the organ in which the trouble may be located. I have seen patients thoroughly anæsthetized by a half drachm of chloroform, and I have used an entire pound upon an individual before I could secure full narcotism, and I have had occasion to keep up the anæsthesia as long as three hours at a time. I have accepted Syme's axiom, and given chloroform to every one, regardless of visceral complications, who has applied to me for a serious surgical operation, and I have yet to see the first death, either in my own practice or that of my friends. Now let us sum up the evidence which I have collected, and here we find an array of *over* 250,000 *administrations of chloroform with* 12 *deaths*, even attributing them all to idiosyncrasy, which calls for a most unbounded charity, and we only have 1 death in 20,000 cases. Can any stronger proof of the excessive rarity of the fatal idiosyncrasy in chloroform be needed?

With ether, although we have no statistical records, I believe that deaths during its careful and full administration are equally rare; and that in America, where it was discovered and has been most used, especially by the Boston surgeons and some in New York (for its administration seems to be chiefly confined to the Northern cities,) we may find surgeons like those above mentioned who have records of thousands of cases without a single fatal issue. And yet, in proof that neither anæsthetic is absolutely safe, deaths, however rare they may be, do sometimes occur during the administration of both ether and chloroform, even when the purest article has been used and every care bestowed in the inhalation. Some surgeons seem to have been unlucky enough to have had a great deal more trouble with anæsthetics than should have fallen to the share of one administrator. I, for one, do not believe in lucky and unlucky surgeons. I believe, with Napoleon, that luck usually accompanies the heavy and best organized battalions.

Against the fatality of idiosyncrasies we can hardly guard, and yet something even here might be done. Three or four times in my own experience I have had cases in which I at the time thought that the anæsthetic which I was administering was badly borne. Once while giving chloroform I noticed a sudden and unusual pallor. I stopped the administration, and the patient, by breathing pure air, soon assumed a natural appearance. I resumed the chloroform with similar results. I then exchanged it for ether, and had no further appearance of these symptons. What might have occured had I continued the chloroform, I am unable to say, possibly nothing but the most satisfactory anæsthesia. It might have been a groundless fright, still I am willing to call it an idiosyncrasy. In a second case, a young girl of seventeen, to whom I had given no stimulus, I thought that the pulse was rapidly enfeebled by the chloroform inhalation, and I exchanged the anæsthetic for ether. These cases occured some years ago. More recently, since the sulphuric ether has been urged as the safer anæsthetic, I, with no reason for doing so beyond popular clamor, have used it very freely. In one or two instances I thought it was badly borne, causing intense congestion of the head or excessive irritation of the throat. In these cases I stopped the ether and administered chloroform, with, as I conceived, marked relief. My fears here again might have been altogether groundless, as in the chloroform cases before mentioned.

I constantly see cases which excite the most anxious solicitude on the part of the timid and inexperienced operators —a marked enfeebling of the pulse, feeble respiration, pallor of the face, and relaxation of the skin with perspiration pouring out upon the surface. Experience has taught me that this relaxed condition, which so many are terribly alarmed about, is only the precursor of vomiting, and is the signal that I must prepare the patient for emesis. This condition, so constantly met with by the every-day administrator of chloroform, has so frightened many an inexperienced or timid operator as to make him believe that he had come within an ace of having a fatal case of inhalation on his hands.

When one uses chloroform or ether in the ways as explained, he might confidently expect no trouble. Should he believe that chloroform always weakens the hearts action, he puts in anticipation the best of cardiac stimulants, a drink of whiskey, in the stomach of the patient, where it is ready for use if wanted, and can do no harm if it is not required. I attribute the uniform success of chloroform inhalation, in the hurry and confusion of battle field surgery, to this invaluable combination of whiskey with chloroform, and this in the face of the fact that as the Government purchases from the lowest bidder, army supplies are never of the best, and in times of war, with heavy demands, army medicine supplies are very far from being chemically pure.

Suppose, however, that from the tediousness of the operation or otherwise there should be a very marked enfeebling of the heart's action, the course to be pursued is very simple. I believe that it is now conceded that chloroform produces anæmia of the brain, and that the various phenomena observed during the administration is in a measure caused by the diminishing blood supply to the various nerve centres. Every one has observed the suddenness with which the anæsthetic effect is diminished with the act of vomiting, with its accompanying congestion of the head. Nelaton took this ground, and has given to the surgical world that admirable mode of restoring vigor to the heart by hanging the patient up by the feet, so as to allow gravity to supply the needful stimulus to the brain. When there is no longer the anæsthetic to the nose of the patient, as every expiration is getting rid of a certain amount of chloroform vapor from the circulation, fresh air would naturally suggest itself as a substance to be freely admitted. Should the respiration cease while the heart still acts, however feebly, artificial respiration should be at once instituted and continued either until the heart altogether ceases to beat, or until resuscitation is fully established. If the respiration and heart's action be detected, however feebly, ample experience shows that fresh air and an inclined position with head downwards is all that is wanted for a re-establishment of the vital functions; and that death which ought not to occur under this condition may often with truth be attributed to the too much manipulation of the frightened attendants. Electricity may help the respiratory effort should it be *properly applied with proper apparatus at hand;* but according to Richardson's experience and observation it is most frequently the name of electricity application only, and in by very far the majority of cases it does more harm than good. For if not scientifically applied it will insure the killing by permanently stopping both heart and lung action.

In those most rare but truly unfortunate cases in which the heart stops beating and remains so for only one single minute, the patient is dead absolutely, and nothing that the surgeon can do will restore him to life. The surgeon, unwilling to acknowledge his utter helplessness, keeps up much doing of many things for many minutes or hours, but all to no avail. These fatal cases should be only the very rare ones of idiosyncrasy which we may hear much of, but may never see, and yet they may occur to the most careful. The majority of deaths ascribed to chloroform properly should be attributed to mal-administration; *a fruitful source of trouble being that timidity of surgeons which will not allow them to safely anæsthetize patients,* but drives them to operate before a sufficient amount of the anæsthetic is administered to protest against the dangers of reflex action. I truly believe that a great many more cases of death under chloroform are to be attributed to the want of it than to an overdose, which comes only next in rarity to deaths by idiosyncrasy; and that the timid surgeon and not the good chloroform swells the mortuary list.

When persons suddenly die on the street or at their homes, the coroner is ever ready with his convenient verdict of heart disease, when most frequently the heart is a perfectly healthy organ, and has been altogether innocently accused. If in any case an anæsthetic has been used and a fatal accident occurs, death is immediately ascribed to the inhalation, when in reality it is due to other causes altogether extraneous to the administration. Notwithstanding this gross error in diagnosis, the reported death has its disturbing influence upon the profession; and when frequently reproduced in the daily papers will frighten the masses.

As chloroform has been up to within a few years the anæsthetic in nearly exclusive use, very naturally a great many more deaths have been attributed to it than to the much less used ether. With its increased use, deaths from ether are now accumulating and could rigorous statistical accounts be obtained, it would be found that ether, in proportion to the comparably small number of inhalations, would relatively exhibit as many deaths as chloroform. Up to within a few years surgeons at large have had every confidence in chloroform, and the language is not strong enough to express their unbounded admiration. Recently this confidence has been disturbed by the much talked-of toxic effects of chloroform, which has frightened the public and excited the timid in the profession until many have imbibed the infection, not knowing why, and have taken to ether, a substitute of limited use, which has not had the opportunity of having as many deaths attributed to its administration. I also three years since, under the pressure of public opinion, or rather the timidity of patients who expressed a preference for it, took up ether and gave it largely. For a short time I used nothing else, but its administration proved unsatisfactory, on account of the great distress occasioned by its forced inhalation in a concentrated form, its offensive odor, the large amount required, the excessive nausea induced, and the irritable cough often excited. As we have all so often done with new remedies, relinquish them in favor of the older ones which had previously been our reliance, so I found myself getting back to chloroform, which I now exclusively and daily use with all the confidence that so useful and safe an agent ought to secure.

Believing, as I do, that both ether and chloroform can kill, when carelessly, indifferently or excessively administered—believing also that either of them will kill when the idiosyncrasy is met with in which its usual benign effects become toxic, and that these two remedies will do so in equal ratio to the number of times in which they are inhaled I naturally confide in the one which experience has taught me to be equally safe, more agreeable, less nauseating, and more efficient. My acquaintance with chloroform has been of the most satisfactory kind. I have seen it administered at least six thousand times, and I have never seen trouble from it. Its effects have been uniformly good.

Since my attention has been turned to the decided advantages of chloroform over the less efficient sulphuric ether, I have often asked surgeons from a distance, with whom I may have been casually thrown, what anæsthetic they use. I find many say chloroform exclusively, from which they had never had an accident, and in which they have unbounded confidence. Others tell me that they administer ether; not that they had ever had trouble with chloroform, but that they had been made somewhat timid by reading reports of fatal cases. They at the same time acknowledge that they do not obtain that satisfactory anæsthesia as they formerly did under chloroform; and that even now, when they find that their patient is not properly influenced with the ether, they pour on the chloroform, feeling that they can look confidently forward to a speedy and thorough anæsthesia.

Believing, as I do, that ether and chloroform will not prove dangerous if a pure drug is selected and carefully administered, except in those extremely rare cases of idiosyncrasy, when both will prove toxic in like proportion, then in the comfort of the administration, both to the patient and to the surgeon, ether, in my opinion, is not to be compared to chloroform as a general anæsthetic, and can never take the place of the latter. The wave of professional opinion must move back toward a returning confidence in the safety of chloroform, which many surgeons who administer it continually have never had shaken.

There is no remedy really good in medicine which is not capable of mischief. More persons are killed every year from the abuses of opium than have been attributed to chloroform from its discovery even to the present time. Deaths from opium in England alone number three hundred per year. How many hundreds are to be added to this occurring under the careful administration of skilled physicians, we can easily conjecture. Yet who proposes to substitute for this king of drugs any of the milder narcotics? We are ready to accept the comparatively small fatality for the immense good it accomplishes. How often during the summer do we find in the daily papers reports of healthy persons dying suddenty from the too liberal potation of ice-water, yet who would listen with any patience to the so-called philanthropist who would wage war against this universal beverage? It has been stated that more persons are killed by slipping on fragments of orangepeel in the streets of London than from the inhalation of chloroform. No one suggests the destruction of orange groves on this account. No one finds fault with the laws of gravitation because persons continue to fall down and break their legs or necks. It is unfortunate for the individual, but the great laws of Nature must ever go on, and the great designs of the Creator enjoyed with wonder and astonishment. Shall we give up the use of horses or steam because accidents happen from both? Would we have all the rivers dried up because now and then a drowned man is fished up out of them? The great discoveries are for the good of the many —not for the few. You can not avoid every danger and supply every good.

With anæsthetics the little risk, infinitesimally small, is immensely counterbalanced by the protection from the very many dangers during operations, so well known and so often experienced when operations were performed without them. Chloroform, when judiciously used, is one of the safest active remedies of the materia medica, supplying nearly every good and avoiding nearly every danger.

"*The greatest gift of God to man through natural science is chloroform.*"

ARTICLE II.

Gingivitis—Its Different Forms—Attempt to Classify its Varieties—Its Treatment by Monohydrated Chromic Acid.

BY M. E. MAGITOT.

Translated from Le Progres Dentaire.

TRAUMATIC GINGIVITIS.—As we have remarked in our preceding classification, traumatic gingivitis comprises the following varieties:

1*st*. *Gingivitis of Smokers*, With carbon deposits.

2*nd*. *Tartaric Gingivitis*, Due to deposits of tartar at the border of the gum.

3*rd*. *Gingivitis of workmen in certain industries.*

Let us consider each of these successively:

1st. GINGIVITIS OF SMOKERS.—This sort of gingivitis consists essentially of inflammation of the free border of the gums with carbon deposits, blackish about the necks of the teeth. It is chiefly found in smokers who make an immoderate use of tobacco, and particularly in smokers who use cigarettes or pipes, both of which are of a nature to excite the greatest irritation in the buccal mucous membrane. It is that form of the disease that represents the first and most simple symptoms, ascribed by many writers to the use of tobacco, which beginning with simple gingivitis, develops into psoriasis and epithelioma in passing through the general stomatitis, forming aphthous patches and epithelial desquamation.

This form of gingivitis is often complicated with those we shall presently describe—that is, gingivitis due to tartaric deposits, which soon are followed with the carbon deposits, produced by the combustion of tobacco. This combination of the two varieties is essentially due to a more or less entire want of proper care of the individuals, who besides being smokers are negligent as to their teeth.

It follows from this that gingivitis is far from being of the same character in different smokers, for by taking some cleansing precautions they free themselves from its production. This gingivitis is then essentially due to direct irritation of the mucous membrane, caused by tobacco smoke, and to the deposits of carbon upon the free border, and as to this last circumstance let me say that it resembles a certain phenomenon pointed out by Gubler in people who use dentifrices of carbon, and which he designates as *lisere*, an embroidered border, of carbon.

Beyond these etiological characteristics which mark and differentiate gingivitis of smokers, the disease presents itself to our observation under the aspect of a red superficial band, comparatively small in height, and constituting an irregular inflammatory border. The free border of the gum is thickened into a roll, somewhat bare, without suppuration, strictly speaking, without heat or pain in the teeth, and these rolls rest in some manner upon another irregular border, adhering to the surface of the enamel and of the neck represented by the bed of carbon particles which cover them. The special appearance of the implicated gingivitis, in other respects, another peculiarity is, that it attacks only certain isolated points, such as the anterior portions of the superior and inferior dental arches, or in other words, the places most directly exposed to the irritating agents. The posterior portions are rarely affected.

These carbon layers ought to be carefully distinguished from other deposits which cover the surfaces of the teeth. They are invariably black, easily detached by means of a scraper, and composed of amorphous particles insoluble in all reagents. The other deposits are of a very different color: as for instance the greenish stains so common on the surface of the human teeth and which almost always cover the teeth of herbiferous animals. These last stains are formed of amorphous particles which furnish the coloring matter of vegetables. Various reagents dissolve them—the acids for instance. Besides these greenish stains, we will add the mass of muscosites and alimentary debris mixed with numerous parasites, which form more or less thick beds upon the teeth, of which the consistency and extent frequently augment in the course of acute diseases; thus then inaction of the mouth occurs from the suppression of the salivary secretions.

It is to these crust-like masses that writers in general, and M. Gubler in particular give the name, *mucus*. We have often objected to this nomenclature. In fact the mouth contains no traces of *mucus*, strictly speaking. The mucous membrane which carpets the oral cavity contains no traces of the muciparous glands; only the salivary glands pass a liquid product into the cavity, and it is the mixture of the liquids with the alimentary debris, and the epithelial layers in desquamation, the clusters of leptothrix, the parasites, etc., which constitute the deposits upon the surface of the necks of the teeth, whether combined or not with the mass of tartar.

Such is, in a few words, gingivitis of smokers: slight irritation, exclusion of the free border, and carbon deposits subjacent. We have nothing farther to say in a symptomatological point of view, of this form which is, in fine, one of the most superficial and one of the least serious of the various kinds of gingivitis.

2nd. TARTARIC GINGIVITIS.—This form of gingival alteration is essentially the consequence of irritation produced by tartaric deposits, at times quite abundant, on the free border of the gum, which cover certain portions of the teeth and often the entire surface of the alveolar ridge. But we must here say a word or two concerning the nature and composition of tartar.

Tartar is a concrete stony mass, generally of a yellowish hue, capable of becoming *very* hard, and which is deposited on the surface of the teeth. The localities in which it is found are, by the order of their frequence—the posterior faces of the antero-inferior teeth, situated at the opening of the excretory ducts of the sub-maxillary and sub-lingual glands; the external faces of the superior molars in the vicinity of Steno's duct, and the inferior molars. It is rarely deposited on the lingual surface of the molars of either jaw, and is never found on the posterior face of antero-superior teeth which are not washed by saliva. These deposits of tartar which, when abundant, are indices of the constant alkaline action of the saliva, are often found in great abundance, when for some reason the teeth of one side take no part in mastication. In such case the deposits occur exclusively on the opposite. We have seen deposits of tartar so thick at times that they completely enveloped the teeth on all sides, in the mass. This phenomena is to be compared with the accounts of Pliny and other ancient writers, which tell of united teeth, constituting to all appearances, one single semi-circular tooth for each jaw.

Tartar is chiefly composed of mineral matter, phosphates and earthy carbonates, the relative proportion of which varies greatly according to different analyses. (Berselius, Vauquelin, Bibra.) Thus, at one time we find 60 per cent. of phosphates ; again, almost the same quantity of carbonates. We can very easily explain the difference in the results obtained ; thus, if the tartar analysed has been taken from superior molars, which are generally covered with deposits of parotidian saliva, there will be found a predominance of carbonates, as in the liquid itself. If it be taken from the posterior surfaces of inferior incisors it will be rich in phosphates. These variations of chemical composition are found in the constitution of salivary calculus and are explained in a like manner. The salts, carbonates or phosphates, are in the tartar mixed with and united to a certain quantity of organic matter—the epithelial cells, fatty globules, leucocytes, filiform algæ and infusoria of a species of *vibrio* and *monas*.

There have been several theories advanced upon the formation of tartar.

M. Serres has admitted the existence of tartaric glands located in the body of the gums and having the property of secreting the tartar of the teeth. Anatomical observations, however, have failed to demonstrate the existence of such glands.

Cl. Bernard's theory asserts that the formation of tartar is due to irritation of the alveolo-dental periostitis, as a consequence of denudation of the soft gums by alimentary fragments during the act of mastication. He compares this secretion to that which sometimes accompanies periostitis of the bone.

This explanation cannot be admitted, and unless we attribute dental periostitis to some secretory action, we need only to remark, in order to overthrow the doctrine that tartar is frequently deposited on bodies introduced into the mouth; such as artificial dentures in the complete absence of teeth and consequently of dental periostitis.

A third theory is that of M. Dumas, who assumes that there exists in the mouth two kinds of saliva, the one acid, the other alkaline, which supersaturates the first. The acid saliva holds the phosphates in solution, and when the alkaline saliva supersaturates the acid, the phosphates are precipitated.

This theory does not seem to us to conform exactly to truth. In our opinion, tartar is the result of a simple deposit, by precipitation, of phosphates and earthly carbonates held in solution in the saliva by virtue of the organic matter with which they are combined. Upon their arrival in the buccal cavity, the elements are decomposed in contact with the air and mucous membrane, the salts insoluble in water are precipitated and deposited on the surface of the teeth. This view is essentially that adopted by M. Gubler.

The quantity of tartar deposited in the mouth varies widely, according to the subjects and those differences are by our theory easily explained. In the one case, simple saliva may contain in certain individuals a less proportion of earthly salts in solution, and the tartaric deposit will be relatively slight; while in another the deposit may accidentally come into contact with an acid reagent which neutralizes it and causes it to enter into solution again in the saliva. If in the last case a deposit sufficiently small is found enveloped in very strong acid saliva, in spite of the neutralization of the tartar already formed, we can still observe an acid reaction at the necks of the teeth which often induces disastrous effects upon these organs.

The existence or absence of tartar in the mouth presents in the history of different diseases a certain signification, as follows: If very abundant, it indicates a free alkaline reaction of the saliva, like that in the centre where the teeth are situated, and if then it constantly excludes the caries of the teeth, it becomes the determining cause of gingivitis by simple traumatic irritation of the mucous membrane. On the other hand if there is but little tartar or none at all, it implies acid reaction of the saliva, and in the centre where the teeth are located, with all its consequences upon the condition of these teeth; then between these two extreme states, are grouped the various degrees of feeble alkaline acid or reaction and the various results produced by them.

Against this theory of the formation of tartar, there has been an objection urged on account of the great disproportion often observed of earthly phosphates which are so scarce in the saliva, whereas tartar contains about 60 per cent. This objection is without foundation, if we reflect that the quantity of saliva secreted, on an average, in forty-eight hours, in man is about 410 grammes, in which case, however little phosphates the salivary liquids contain, the formation of tartar can still be explained; for we know that this deposit is produced very slowly, and that many years are required to form a layer of much thickness.

The places chosen by the tartaric deposits, indicate directly the points which will be particularly effected with this kind of gingivitis; but we should further say that other accidental circumstances singularly favor the production of it; thus the loss of one or more teeth, certain diseases of the teeth, caries for instance, or at times an incomplete action, by simple negligence, of a whole side of the mouth. In case that the masticatory functions are performed only on the opposite side, the immediate consequence is that the active side free from all deposits is wholly normal, while the other, encumbered with calcareous masses is soon attacked with gingivitis.

We observe that the intensity of the gingival affection varies according to the quantity of tartar deposited.

In the most favorable cases, there is a simple reddish roll or band, raised by the tartar deposit, which has for its seat the interstice of the gingival border and dental surface, in other words the necks of the teeth. You very frequently find it on the anterior and posterior faces of the inferior alveolar border. The opposite region, the antero-superior, is nearly always free from it, as we have said above, on account of the absence of salivary secretion at this point, and also because the incessant motion of the tongue and lip continually cleanse the surfaces.

In a more strongly marked form, that is with a very abundant deposit of tartar, the affection is more extended. There is a festooned tumor with true absorption of the gums of the teeth, denuding them to a certain extent.

The gums then present a fungus appearance; they bleed at the slightest touch. Arrived at this stage, the disease is generally complicated with a certain degree of looseness and deviation in the teeth, due to the propagation of inflammation in the alveolo-dental periosteum. But as regards this, we have not extended our topic to the subject of periostitis itself, which only represents, after all, an after phenomenon and a consequence of primitive affection, and which must look elsewhere for its description.

To sum up, the essential and distinguishing characteristics of tartaric gingivitis are the results of the presence of tartar in deposits more or less extended and exclusively localized within the places of this material.

As to the treatment of this particular form, without wishing to here prejudge the rules of therapeutics which we will attempt to establish soon for gingivitis in general, we can say previously, that the application of these means will be invariably preceded by the simple removal of the deposits.

Further, you must attempt to cure the disposition or dental lesions that have been the cause of their production and apply hygienic agents with the view of chemically neutralizing the tartaric product on the place, or to check its return. This will be taken up in another lecture upon "*Rational Hygiene of the Mouth.*"

3rd. GINGIVITIS OF WORKMEN IN SPECIAL INDUSTRIES.—With traumatic gingivitis, there are classed certain inflammations of the gingival mucous membrane, which are peculiar to some industries, independent of other lesions of the same order, which result from intoxication and which will be described with poisonous gingivitis.

In that class of gingivitis which has received the name of "*industrielle*," we find in the most conspicuous place that which was first described by Putegnat. He found it existing among the workmen of the glass factories of Baccarat, where 95 per cent. of the mechanics were affected to a greater or less extent.

The author from whom we borrowed this short description makes the remark—that the different conditions of temperature, of nourishment, of kinds of work, seem to exercise no influence upon the production of this disease; so that the time spent in the workshop seems to be the essential cause of its appearance.

The characteristics which it presents are: a tumefaction of the free border of the gums, with a swelling of the festoons along the margin of the dental interstices; the mucous membrane is red at first, then changes to a bluish black. It is a kind of *lisere* with thickening very different, according to Putegnat, from *lead lisere* which is in other respects in no way inflamed.

This distinction upon which the author carefully insists was necessary because the work of glass makers can, as we might suppose, lead to comparison with diseases due to leaden preparations.

Finally, there exists in this variety of gingivitis a local peculiarity very important for diagnosis, and one which, in some way, furnishes the etiological nature of it. It is that the disease is accompanied, or perhaps preceded, by caries at thé necks of the teeth—caries that hasten to the rapid destruction of the crown, which as though a section was taken out at the level, breaks and falls in. The circumstance leads us directly to a peculiar consequence, viz: that we do not know how to compare gingivitis of glass workers to tartaric gingivitis, provided that the presence of tartar and dental caries exclude the usual reciprocity.

The lesion described by Putegnat is invariably located on the free margin of the gums without evidence of extension either to the buccal mucous membrane or dental periosteum. It follows from this that it is unaccompanied by loss or destruction of the teeth ; consequences quite frequent in the other numerous forms.

In the examination of the causes of this affection, Puteggnat makes allowances, it is true, for the surrounding circumstances, such as the humidity of the rooms, insufficient ventilation and other different common causes. But in his mind it is evident that the essential cause is the existence of fine glass dust in the factories, which fill the whole atmosphere and is deposited on the necks of the teeth, or that their presence excites the traumatic lesions with which they are affected.

Unable to produce here any personal experience, let us study again especially this kind of observation, and if we have, hereafter to explain the intervention here of the particles of dust in the production of concomitant caries, we shall easily succeed.

Pathogeny of gingivitis from the manufacture of glass can also be compared to many other analagous explanations; thus it is an action of the same sort as produces ophthalmia in quarrymen, coal men, and it is also proper to recall here that the workmen or miners, as also the workmen of Baccarat, are affected with a disease much more serious and which results from the presence of foreign substances ; we refer to deposits of matter in the respiratory ducts that invite tuberculization in rapid effect.

However it may be, the gingivitis of glass-blowers is not the only disease met with in the industries ; as for example, workmen employed in the manufacture of arsenical preparations; manufacturers of colored papers, (Imbert Gourbeyre;) the manufacturers of iodic and phosphoric preparations, (Lebert et Wyss;) the mines of Almaden, (Roussel;) but these are forces considered mostly under the head of poisonous gingivitis, and which will be described later. The gingivitis of the manufacturers of Baccarat, is, it is true, the only one which has been so far clearly and nosologically described. But there are surely many others that are essentially of the traumatic character.—*Mo. Dent. Journal.*

ARTICLE III.

Plastic Filling, and the Basal Principles of the New Departure.

BY J. FOSTER FLAGG, D. D. S., OF PHILADELPHIA.

MR. PRESIDENT, AND GENTLEMEN OF THE ODONTOLOGICAL SOCIETY OF NEW YORK.—I wish to thank you, from the very bottom of my heart, for the invitation you have extended to me to speak to you this evening. I wish you to understand that I distinctly appreciate the honor which you have conferred upon me by giving me more than ten times the usual limit given to one who speaks before you. Furthermore, gentlemen, I know that you are well aware that I have much to present to you which is out of the ordinary course of communications to dental societies. But, gentlemen, you don't know half what a heretic I am!

That which I bring you to-night is no growth of a day. It is no work of a year. I therefore recognize that what seems to me to sound as it ought to sound, will sound to you just as it ought not to sound. I shall present to you the time-honored and ordinarily "accepted creed" of dentistry, and I shall advocate before you the diametrically antagonistic "creed of the New Departure."

Do you suppose it is a new thing for me to be antagonizing accepted dentistry? No, gentlemen. For more than twenty years I have not known what it is to be upon the "right side."

Twenty-two years ago, my very good and highly esteemed friend, Prof. Robert Arthur, enunciated his belief in leaving decay in the cavities of teeth and filling over it, and it was stigmatized as nasty, dirty, slouchy work, and our "great man," Prof. J. D. White, said that "when he could not spend time to properly clean out the cavities he would retire from practice." Here is a document, written by my honored father's own hand, giving an account of the action of a college faculty on the question: "When the Faculty of the Old College met for the purpose of arranging the last 'announcement' of that school, exception was taken by Prof. White to what he considered as 'false doctrine' on the part of Prof. Arthur, in regard to two prominent features in our art, both of which may be considered of vital importance to our success as instructors, and to the successful practice of many of our graduates. The first of these was, that Prof. Arthur advocated the leaving of caries in the cavity of a tooth and plugging thereon. And the second, deemed equally objectionable, that of using 'sponge gold' as a material for filling teeth, and as a substitute for gold foil. *Now, although every other member of the faculty fully coincided with Prof. White in his opposition to this practice of Prof. Arthur,*" etc., etc.

How many of the professors of to-day oppose the "leaving of decay and the plugging there on" when the pulp would be exposed by its removal? It is now the accepted practice; and yet, only twenty little years ago, it was so heretical and such "false doctrine" that the entire faculty "coincided with Prof. White," and Dr. Louis Jack and Dr. J. Foster Flagg were the only two men of the forty-five hundred dentists of the United States that immediately accepted Prof. Arthur's practice, and from that day to this have systematically left decay in every cavity where its removal would expose a living pulp. Thus you see, it is no new thing for me to question the creed of the profession. I became used to it when I was young, and it has grown with my growth.

Years have rolled on, and, as you know, without much attendance on my part at dental meetings; but do you suppose I have been doing nothing? Far from it. Day by day I have filled tooth after tooth and have marked what I have done. Year by year I have tabulated results until they now amount to thousands upon thousands. Letters by the score have passed between Syracuse, St. Louis and Philadelphia. At length I wrote to my friends, Drs. Palmer and Chase, that I felt we were as ready now as ever we should be.

Gentlemen, we believe that we have, for our "New Departure," grand, basal, foundation principles, which have so grown with us that they already seem as old and as solid as the hills.

More than twenty years ago, Prof. Elisha Townsend gave to his contemporaries the assertion that he "saw daily the undeniable evidence of the fact that teeth could be saved with amalgam, which *he* could not save with gold." His memory is revered by us all. As a worker in gold he was unsurpassed—as a proof of his estimation of plastic filling he gave to his profession "Townsend's Amalgam," that material with which we began our labors, that material which had so much of good in it that we were more and more impelled, as the years passed by, to recognize its value.

I feel that I owe much to Prof. Townsend, for he made the way of experiment easy for me. Within a very short time after his death, nearly two hundred of his families became my patients. This not only placed me (then a beginner *in Philadelphia*) at once in full practice, but enabled me to cultivate a ground for plastic filling, which had been well broken by one in whom they had unbounded confidence. Now, gentlemen, the statistics which I propose to offer tonight have been based upon this experience.

ARTICLE I. ACCEPTED CREED.—*Gold is the best thing to save teeth.*

ARTICLE I. NEW DEPARTURE.—*In proportion as teeth need saving, gold is the worst material to use.*

Gentlemen, I am, for the moment, literally but a mouthpiece; Dr. Chase has spoken to you. This article is his. He was the first who had the hardihood to say that "in proportion as teeth *need* saving, gold is the *worst* material to use." This he has said, and Dr. S. B. Palmer and I fully endorse that which he has spoken.

Mark my words! This is a real *belief* which I am speaking to you. Men are coming to our belief every day—the thinking men, the observing men of dentistry. They write me that they introduce their beautiful jewels of gold, with the view of their premature wreck staring them in the face! That with their very best and long continued effort, they are unable to save teeth as they would *with gold.*

And is this nothing? Can a man continue to work and put "piece after piece" in proper place when he feels that the work is killing the patient, and himself, too, and that, when a few short years shall have passed away his work will be good for nothing?

This is what sapped me fifteen years ago. I had been filling teeth *then* for fifteen years. I can show you plenty of plugs of gold—not twenty or thirty, but hundreds—that I introduced more than twenty-five years since, and which are just as good to-day as on the day when they were done. But these were in strong teeth, in places easy and accessible, in teeth that might have gone but little had they been left unfilled; while of the others, of the teeth that *needed* saving, I can but tell you just what all have seen. One by one these teeth came back to me. Day by day I saw my best efforts going to destruction. I *heard* that my work must be defective; but I *felt* that there *might be something lacking in the material.*

And then there were the first of my statistics. It is more than twenty years since this work was begun. Twenty-two years ago I made five hundred fillings. Two hundred and fifty were of gold—just as the cavities came in practice,—the next two hundred and fifty were of tin, gutta-percha and amalgam, the amalgam taking the brunt of the battle and used in places that were too far gone for any other thing. I then waited for five years, watching the progress of events, and, meanwhile, returning to orthodox practice. At the end of this time I was not satisfied, and I waited another year. It was to be a *life-work* with me. I could not do it over again, nor can I. I have done!

At the end of that time the "undeniable evidence" presented itself to my mind. I felt the truth of what Dr. Townsend had said, and came solidly to the belief that *I* could *save teeth* with amalgam which I *could not* save with *gold;* for already in the soft teeth, in the inaccessible places, in the cavities under the gum and with frail walls, the gold fillings were becoming defective, while the plastic fillings far, far better held their own.

To-day, gentlemen, the efforts in gold which formed that trial band have almost passed away; and still quite a number of the plastic fillings, *some even of the most hopeless cases*, are pointed to with pride and satisfaction by their owners.

Seventeen years ago I began the systematic introduction of six per cent. of plastic fillings, choosing, of course, those places best adapted for them—that is, *the worst.* The next year I introduced twelve per cent., the next eighteen per cent., and year by year results were such as warranted this progression. You can readily see where this ends. This is my seventeenth year, and I should have put in 102 plastic fillings in every 100. I found myself not equal to the emergency.

I stand before you with a practice which I have been sixteen years in arranging. I have taken the refuse teeth from all directions; announcing, from year to year, to my patients, that I desired the teeth that were ordinarily extracted, and that I was fast abandoning artificial work, because I felt that I could do my patients better service by repairing wrecks and building crowns on roots. The result is, that I have many mouths in which the teeth have proved themselves wretched beyond wretchedness, yet these are all comfortable. I have teeth by the hundreds such as melt (for they *have* melted) from gold like snow before the sun, at the hands of some of our very best operators.

For all this heap of seeming impossibility I use nothing but plastic fillings. Once in a while I use *tin* because I am engaged on a series of experiments to discover the action of this metal on dentine. Our filling materials are gutta-percha, amalgam and oxychloride of zinc (so called.) With these I do everything. All this in the mouths of the *very best* class of patients.

"*In proportion* as teeth *need* saving, gold is the *worst* material to use."

This point alone takes in the whole of Palmer's electro-chemical theory of the action of filling materials: but I must tell you what the work of winnowing out the chaff, as far as we could do it, has eliminated.

The work has been borne by Prof. Henry Morton, of Hoboken, and Prof. Snyder, of Philadelphia, scientists; Messrs. Eckfeldt and Du Bois, Assayers of the Philadelphia Mint, metallurgists, and Drs. Palmer, Chase and Flagg, dentists.

We have carefully, and, we believe, scientifically, investigated every line of experiment which has professed to show *the current* which, we believe, is eliminated by contact of metal with tooth-bone. This we have done with the best instruments and apparatus which our country can produce,—and we find that such current *has never been shown*, much less measured. Even that curiously ingenious line of experimentation upon this subject, which was presented at the "Centennial" meeting of the American Dental Association, and which gave to our profession that scale of relativity known as the "Harvard Tension Series," in which gutta-percha was placed at "0" and gold at "200°," and which gave those who had faith in gold such "a black eye" (as it was expressed,) we pronounce utterly worthless and without any scientific basis. And yet I will read you Prof. Morton's opinion of that electro-chemical theory upon which we rest our belief, as expressed in this Article I; for if gold *is* the worst material to use, there must be some scientific reason.

After speaking of the great difficulty of *current elimination*, Prof. Morton says: "On the other hand, we have the best reason for assuming, on analogy and authority, that all chemical action invokes electrical disturbance. Now acid fluids do act chemically on bone, and the presence of a good conductor, which is itself unattacked, in contact, must, on general electrical principles, assist the electro-chemical action. Supported by your facts of observation, and the reasonableness and consistency of the electric theory, you may well rest your case there. But it is, of course, very important not to give your opponents a chance to attack by resting, for a proof of your theory, on experiments which are themselves unsound and capable of confutation."

Now you see, gentlemen, that notwithstanding the fact that we are unable, as yet, to *demonstrate* the existence of the current, yet, nevertheless, the "reasonableness" and "consistency" of our theory is such, that we may say that gold, being a good conductor and being itself unattacked, when placed in contact with tooth bone must, on general principles, cause excessive electro-chemical action, which action must eventuate in disintegration of tooth tissue; and, therefore, gold is the *worst* material to use when a tooth is of such structure and in such condition as that it needs something which will help to preserve it.

The stereotyped answer to this is couched in these few words: "If gold is so put in as that no fluid can come between it and the tooth bone, there will be no chemical action—because where there is no fluid there cannot be any chemical action." Then, gentlemen, *why don't you put it in so?* If you cannot, then use something else, if for no other reason.

[TO BE CONTINUED.]

ARTICLE IV.

Directions as to the Treatment of the So-called Riggs' Disease, with the Instruments Devised by Dr. Riggs.

BY GEORGE A. MILLS, BROOKLYN.

Dr. Riggs' instruments are six in number. Their peculiar value is in their forms, which make it possible to reach the remotest parts of the diseased structures. Nos. 1 and 2 are rights and lefts, and are designed to be used on the approximal and buccal surfaces of the molars, generally from, instead of towards, the operator. Nos. 3 and 4 are also rights and lefts, with the cutting edge towards the handle, and are intended to be used on all the surfaces of the ten anterior, superior, and inferior teeth, and also on the lingual and palatal surfaces of the molars. No. 5 has two cutting edges towards the handle, is thin, and spring-tempered; to be used between teeth closely approximating to each other. No. 6 has two cutting edges towards the handle, and corresponds in shape to Nos. 3 and 4, and is for general use.

In order to facilitate the operation, and to be sure that the ground has been thoroughly gone over, it is safer to establish something of a system in the operation. For instance, if the anterior inferior teeth are to be operated upon, commence at the mesial line, with instrument No. 3; standing on the right side of the patient, with the left arm thrown around the patient's head to the left side; the fingers of the hand placed under the chin, and the thumb resting on the cutting edge of the teeth or on the lip; the right hand grasping the instrument, with the thumb resting upon the teeth or jaw for support, and beginning at the mesial line on the proximate surface of the right central, drawing the scaler with a circular motion towards the labial. Having completed the operation on that part of the tooth, not only to the extreme point of the disease, but beyond and into the live tissue (the operator can detect by the feeling, which is transmitted readily to a hand trained to a delicate sense of touch, the difference between living and necrosed tissue,) pass to the next tooth, cleansing the same surfaces in the same manner to the same point, and continuing on each tooth to the posterior approximal surface of the second bicuspid, as a general rule. From this point, taking up instrument No. 1, pass on with it to the third molar in the same manner, with the exception that the movement should be from, instead of towards, the operator. Then coming back to the mesial line, with instrument No. 4 operate on the same surfaces in like manner to the same point on the left side, up to the point at which instrument No. 1 was taken up. Then substituting instrument No. 2, pass on to the third molar, as before directed. We have now been operating from right to left on both approximal and labial surfaces. We now consider the operation about half completed. We again come back to the mesial line and operate from left to right in the same manner; this being done, we have completed the operation on the lower teeth, with the exception of the lingual surfaces. We again commence at the mesial line, and operate from right to left, and from left to right, using instruments Nos. 3, 4, and 6, according to convenience. This being done, the operation on the lower teeth is supposed to be completed so far as the Riggs instruments are concerned.

Experience, which is the best teacher, will direct the operator in all the different stages of the disease that may come under his notice. It will require no little patience, perseverance, and experience to become an expert in this operation, but the reward will come through success, and will be a great compensation. No operation performed by the dentist in the mouth is more appreciated by patients after they have seen the results. It is really a surgical operation, and is of vastly more importance than has been attached to it by the profession generally. The teeth and all the exposed portion of the roots must now be polished;

the nicer the better. A very efficient method of polishing the necks and crowns, and even down on the roots in many instances, is by the use of various widths of *tape*, with pumice or other polishing powders. To make the tape efficient in covering the entire surface, double it in the form of the letter U, placing it over the tooth to be polished, and taking the ends and crossing the tape around the tooth, giving a backward and forward motion, quickly and gently, up and down. A clean, polished surface can thus be secured more quickly and more perfectly than in any other way. A soft string used in the same way is efficient, as are also all the polishing appliances used in connection with the dental engine. After this operation is completed, have the patient rinse the mouth with lukewarm salt-water; the salt in the proportion of a teaspoonful to a goblet of water. Now pack around the teeth a sufficient supply of Japanese paper, and absorb the excess of moisture, then apply the officinal aromatic sulphuric acid with the Farrar syringe, which is doubtless the neatest and most efficient instrument we have at the present time, because of the long and delicately-constructed gold tubes, and the method of forcing the acid direct to the parts, and avoiding its escape into the mouth, by means of the screw on the piston. This completes the entire operation upon the lower teeth. The patient should be directed to wash the mouth thoroughly from day to day with lukewarm salt-water; and if inconvenienced by tenderness or pain about the teeth, may be instructed to apply tincture of myrrh, which will afford immediate comfort. Give earnest and intelligent directions as to the manner in which the teeth should be brushed; not crossways, but with a rotating motion, the inferior teeth from the gums up, and the superior teeth the reverse. Impress upon the patient the importance of more than ordinary effort, and give the assurance that this method of brushing, faithfully carried out, will prevent the return of the deposit upon the teeth. This I give as an answer, which is incontrovertible, to the remarks so often made, that if the deposits are removed they will again return. I say it without hesitation, for I have been making observations of late that prove it to be true, that faithful brushing by patients, under the instruction of the operator, will prevent it. Should the case which has been treated have advanced towards the third or fourth stages, as described in former articles, the amount of morbid tissue which might be more or less present can be brought more expeditiously to a healthy action by local treatment with tincture of iodine, but it will generally be found that the use of aromatic sulphuric acid will be sufficient. In extreme cases the patient should be required to revisit the operator, as directed by him, that he may watch the progress of the case and apply the remedies that may be indicated. At the expiration of about four weeks the congested tissue will have been displaced by a more healthy one. The case will now admit of a *revision* at such points as may indicate the necessity. In extreme cases, I have noticed a general improvement going on over a period of time extending to six months; giving indications at that time of an amount of success that the second or third month did not show.

I have perhaps said enough in these articles to convince not a few of the importance of this matter. Many have spoken to me regarding it, and have asked how great a percentage of the cases are amenable to treatment. Dr. Riggs claims *ninety per cent.* I think it true *in his hands;* in my own, the percentage increases with my experience.—*Dental Cosmos.*

EDITORIAL, ETC.

The Thirty-Eighth Annual Commencement of the Baltimor College of Dental Surgery was held on the evening of March 5th, 1878, at the Academy of Music, Baltimore City, before a large and brilliant audience, the auditorium being completely filled. The stage, as is usual on such occasions, was reserved for the Faculty, Graduating Class and Guests. The Music included fine operatic and popular overtures, &c., and was rendered by the Fifth Regiment Orchestra, Wernig, director.

The opening prayer was offered by the Rev. J. W. Kaye. Prof. F. J. S. Gorgas, Dean of the College, then read the Mandamus under which the institution was authorized to confer upon the graduates the degree of "Doctor of Dental Surgery," and also announced the names of those who had complied with the requirements of the Charter, and passed satisfactory examinations on the different branches necessary to qualify students for the practice of Dentistry. After music the ceremony of conferring the degrees on the members of the Graduating Class was proceeded with, the members advancing in classes and receiving their diplomas as testimonials at the hands of the Dean.

The display of beautiful floral favors for the graduates was unusually large and fine, and their presentation greatly enjoyed by the large audience present. The Valedictory Address was then delivered by Rev. Julius E. Grammer, D. D., who passed in review the progress in the science of dental surgery, the usefulness of the Baltimore College of Dental Surgery, having been organized as the first College of the kind in the world and as an experiment, but that it had a substantial basis in the necessities of the human race, and was in answer to the demand for progress in useful and beneficent sciences. That the modest institution which was founded in 1839, has become an influence throughout civilization, and has contributed to bring about a remarkable development in dental science. That this College can point with pride to the high standing of many of its graduates, and the prominent stations they command as the leading practitioners in this country and Europe. This address was listened to with the greatest attention, and the speaker warmly applauded at its close. The Class Address was then delivered by James Williams Tucker, of Virginia, a member of the Graduating Class, who for thirty-four minutes held the earnest attention of the large audience, and was many times applauded. The Benediction was then pronounced and the Thirty-Eighth Session of this Mother of Dental Colleges was thus appropriately closed.

The following Graduates had conferred upon them the Degree of Doctor of Dental Surgery, completing the number of 800 Alumni of this institution :

	SUBJECT OF THESIS.
Jose Dolores Amieva, Jr.,	*West Indies.*—Mercurial Stomatitis.
George Edward Baughman,	*Maryland.*—Digestion.
Friedrich Moritz Brandt,	*Germany.*—Leptothrix Buccalis.
James Thomas Calvert,	*South Carolina.*—The Dental Pulp.
Elvira Castner,	*Germany.*—Second Dentition.
Adolfine Petersen.	*Germany* —First Dentition.
William P. Crickenberger,	*Virginia.*—Respiration.
Charles Simon Hoffman,	*Maryland.*—Caries of the Teeth.
Charles Seymour Kelly,	*Montana Ter.*—Dental Caries.
Joseph Cicero King,	*Tennessee.*—Mastication.
John William Daniel Maier,	*Maryland.*—Diseases of the Gums.
Alexander Carson McCurdy,	*Pennsylvania.*—Dislocation of Inferior Maxillary.
Granville Eustace Medley,	*Kentucky.*—Circulation of the Blood.
William Henry Richards,	*Tennessee.*—Nitrous Oxide Gas.
James Williams Tucker,	*Virginia.*—Filling Teeth.
Robert Bentley Varden,	*Maryland.*—The Blood.
John Nathan Webster	*Virginia.*—The Ideal Dentist.

The Thirty-Ninth Annual Session will commence on the 15th of October, 1878, and continue until March, 1879. The Summer Session will commence April 1st, and continue until the last of June, 1878. The Infirmary is open during the entire year for dental operations.

Chemistry.—This noble, experimental and exact science, must in some future time confer a great blessing on the dental profession.

It is through experimental Chemistry, that the dental cement is to be discovered, which will take the place of nearly all these *stoppings.* I hope the discovery will be made by a practical dentist. Chemistry is a fascinating study, and it is a pity that so few dental students are aware of it. Fifty dollars worth of chemical apparatus in the laboratory, would give amusement and instruction to many young practitioners, who have some leisure in their early professional life. Vast good would ultimately arise from even a *small* army of *experimenters.*

C.

The Dental and Oral Science Magazine.—Quarterly; Devoted to Professional Interests and the Transactions of the New York Odontological Society.

This is the title of a New Dental Journal, which professes to be the only medium of publication for the proceedings of the New York Odontological Society, besides original articles from other sources.

It is stated that each number will contain about seventy-two pages in the literary department, and a number of advertising pages extra.

The first number has, besides the advertisements, about ninety pages, illustrated with seventeen extra fine wood cuts. The new publication presents a very handsome appearance, and will no doubt be ably managed.

OBITUARY.

Dr. George J. Barclay, of Pittsburgh, Pa., died suddenly of internal hemorrhage, at the residence of Dr. W. H. Atkinson, New York City, on the morning of the twenty-second of January 1878, in the fifty-third year of his age.

Dr. Barclay was a superior operator, and unusually courteous with his patients. The dental profession has few such members to lose.

MONTHLY SUMMARY.

Is the Human Eye Changing its Form, and becoming Near Sighted, under the Influence of Modern Education?—Dr. E. G. Loring recently read an interesting paper on this subject before the New York County Medical Society (*New York Med. Jour.*, Dec. 1877.) He said that hereditary influence was an important element in the production of myopia, and, although statistics did not strongly indorse that view, he still held that legendary information should receive much credence. In regard to the influence of modern education, it was found that a larger proportion of those living in cities were near-sighted than those in country districts; and, moreover, in those cities where intellectual pursuits were greatest, the largest number of myopes were found. In savage nations near-sightedness was very infrequent, and it would seem, in some respects, that it was a result of education. While the intellectual classes in Germany showed a large proportion of myopia, it was not so found in those artisans who used their eyes on fine objects, as watchmakers and wood-engravers. In England, where there has always been great intellectual activity, by no means as large a ratio of near-sightedness had been detected as in Germany, and it became necessary to seek for other factors to explain the prevalence of myopia. Impaired nourishment, imperfect ventilation, together with a sedentary life, had a marked tendency in producing laxity of the tissues in general, including of necessity the coats of the eyeball; and, with the tension which resulted from close application of the sight, there was a great probability of lengthening of the eye, or myopia, resulting. In New York the German children were found more often near-sighted than those of other nationalities. Dr. Loring said that undoubtedly myopia was hereditary, but that in all probability it could under no circumstances be developed; but he did not believe that of necessity it must increase in a nation engaged in literary pursuits. In the United States the normal eye predominated, and he thought it was due to the fact that the young were more in the habit of indulging in out-door sports than in Germany. The same was true of England. From a careful analysis of the myopic cases, it was found that between the ages of ten and fifteen the majority developed; or, in other words, at that time the tissues of the globe were more readily affected by strain of the muscles of the eye. It could be easily understood, under such an hypothesis, why the industrial classes were so little liable to near-sightedness, for they seldom reached the practice of the more intricate branches of their trade before their eighteenth year. In conclusion, Dr. Loring was of the opinion that under proper precautions, the normal eye could be continued indefinitely. If children were not allowed to apply themselves too closely to their studies between their eighth and sixteenth years, and were, moreover, allowed the proper amount of out-door exercise, not much danger need be dreaded. It was important also to have the schools perfectly ventilated, and other hygienic conditions made as perfect as possible.—*Medical News and Library.*

Simple Mode of Relief for Foreign Bodies in the Throat.—A British naval surgeon, Dr. Beveridge, states that for foreign bodies in the throat, such as a piece of meat, etc., a simple mode of relief is to blow forcibly into the ear. This excites powerful reflex action, during which the foreign body is expelled from the trachea. The plan is so easy of execution that, if there is anything in it, it ought to be generally known and applied—*Canada Medical Record.*

Danger of Ether.—The following painful occurrence is related by the Paris correspondent of the New York *Times.* Whatever may be the dangers attending the application of chloroform, it has at least the advantage of not being inflammable.

A young lady of eighteen, remarkably beautiful, belonging to a family of rich merchants of Lyons, had to undergo a surgical operation. The surgeon said that it was necessary to give her ether. The sack was prepared, and the young lady had been inhaling it for a moment, when a light was brought near the patient. In an instant the ether was ignited, and the sack exploded. The doctor was himself seriously burned, but the young lady was in a lamentable condition. Her nose was taken off completely, and one side of the upper jaw was laid bare. It is needless to say that she is horribly disfigured for life. No one could describe the despair of the family, and perhaps it would have been better had the poor girl died from the effects of this dreadful wound. It is rumored that the doctor has committed suicide.—*Druggists Circular.*

Injury from Disturbed Sleep.—"It is diseased imagination which fills our mad houses. * * It is *expectation* which deranges the normal condition of the brain. * * The difference in annoyance [as of disturbed rest] is immense as between the well man and the sick; moreover, there is also a difference in this connection, not only between those who are ill and those who are well, but a difference, and a natural one, between men and women. * * To invalids the afternoon or early evening sleep may be as important as the night sleep, and in the case of infants particularly so. * * To many men the hour or two of early rest on Sunday morning is a necessity, not a luxury. The pressure of modern social life necessarily produces, especially among professional men, a degree of brain-tire—of loss of power to use the brain, of which the results are terribly alike, beginning with insomnia, irritability, nervous excitement, cerebral derangement, and running the gamut of mischief down to paralysis and death. * * A man whose brain has been sorely worked during the week, and whose brain-tire is habitually lessened by one or more extra hours of sleep on a Sunday, is pushed well on his way to disease by having that natural medicine withdrawn."—*S. Weir Mitchell, on the ringing of St. Mark's, Philadelphia, Chimes, and the disturbance to sleep of the neighborhood.—Jour. of Nervous and Mental Diseases.*

A New Counter-Irritant.—It is related by Dr. Coutivier, in *L'Union Medicale*, that the extract of pimento is a most admirable revulsive in a large number of cases, and may usefully take the place of mustard and flies. It is proposed by M. Lardy. The writer says it acts with great rapidity, ten to thirty minutes, according to the point of application and the delicacy of the skin. Its action is manifested at first by a sensation of heat, a slight smarting and redness. These go on increasing for about three hours, then they remain stationary, and the revulsive action is so continued as long as may be desired. Nevertheless, after twenty or twenty-four hours in the adult, eight to ten in children, it is better to remove the plaster, and put another alongside of it if it be desirable to continue the revulsion. The heat and tingling produced are painless and free from itching. * * * * The extract of pimento has a beautiful red color identical with that of the dried fruit. Suitably incorporated in a plastic mass, and spread upon squares of paper, its application is very easy. It is unnecessary to warm it, for it adheres sufficiently to the skin; but it is well, on parts subject to movement, to fix it with a bandage just as a blister. Moreover, its action may be augmented or moderated according to the pressure. On removal, the heat and tingling may be immediately arrested by the application of a little starch.—*Druggists Circular.*

Death from a Carious Tooth.—A singular case of death lately took place at the Lariboissiére Hospital, under the following circumstances: The deceased, a boy aged seven, was admitted into the hospital complaining of pain in the head accompanied with a tendency to stupor. His eyes were somewhat prominent, but nothing else remarkable was noticed in the patient. About month after admission coma set in, and this was accompanied with high temperature, which carried him off. A small, hard body was felt over the right eye, which was supposed to have been the cause of death. At the post-mortem examination the real cause was traced to a carious tooth, one of the inferior molars, which caused an abscess in the jaw. The inflammatory process extended along the dental nerve, entered the skull through the orbit, involving the dura mater and the brain. The latter contained two or three abscesses, and the bones of the skull were necrosed to a considerable extent. An abscess was also found in the heart. This case would show how important it is to attend early to carious teeth, and to have them removed as soon as inflammatory symptoms become evident, and not to tamper with them by "stopping" or other useless means frequently resorted to by dentists, to the detriment of the patient's pockets, if not of their health or life.—*British Medical Journal.*

A Simple Telephone.—PROFESSOR BARRETT, in a recent lecture on the telephone, gave a recipe for making a cheap one. Take a wooden tooth-powder box and make a hole about the size of a half crown in the lid and the bottom. Take a disk of tinned iron, such as can be had from a preserved meat tin, and place it on the outside of the bottom of the box, and fix the cover on the other side of it. Then take a small bar magnet, place on one end a small cotton or silk reel, and round the reel wind some iron wire, leaving the ends loose. Fix one end of the magnet near, as near as possible without touching, to the disc, and then one part of the telephone is complete. A similar arrangement is needed for the other end. The two are connected by the wire, and with this Professor Barrett says that he has been able to converse at a distance of about 100 yards.—*Druggists Circular.*

Calculus in the Sublingual Duct.—Dr. F. D. Lamb, of Great Bend Village, Pa., reports a case of the above occurring in a young man, aged 26 years. It appeared as a suppurating swelling under the tongue, which discharged pus and disclosed a white and hard substance through the opening. The latter was enlarged, and the calculus, one-fourth of an inch in length, one-tenth of an inch in diameter, and weighing six grains, was removed.—*Med. Record.*

Results of Intermarriage.—Mr. George Darwin, after searching investigation, concludes that "the widely different habits of life of men and women in civilized nations, especially among the upper classes, tend to counterbalance any evil from marriage between healthy closely related persons." Mr. Darwin's views are in a measure sustained by Dr. Vorni's inquiry into the commune of Batz. Batz is a rocky, secluded, ocean-washed peninsula of the Loire Inferieure, France, containing over three thousand people of simple habits, who don't drink, and commit no crime. For generations they have intermarried, but no cases have occured of deaf-mutism, albinoism, blindness, or malformation, and the number of children born is above the average.—*Med. and Surg. Reporter.*

American Dentists in Europe.—At the meeting of the New York Dental Society, Dr. Straus, of Paris, made the following remarks:

"I have a few remarks to make in regard to the dentists on the Continent. In the first place, in regard to the fees. I have noticed that among the better class of dentists there, speaking principally of Americans, as a matter of course, and among the better class of patients which I have had occasion to notice in St. Petersburg, Berlin, Vienna, Paris and London, that the fees are uniform with the fees of first-class dentists here. The prices vary from five dollars to fifty dollars for filling teeth, and not less, but rather more. Artificial work pays better in general. In France an American will not put in a set of teeth for less than eight hundred francs, which, I believe, is about one hundred and fifty dollars—a little over. The art of dentistry is, in general, among the better class of people in Europe, as much esteemed and looked for as here in America. Your next meeting, I believe, is in October. I could then with the greatest pleasure give you a fuller idea of my experience in dentistry of the last ten years in St. Petersburg and in other cities which I have named. * * * The native dentist has not the standing that the American dentist has in Europe, in England or in France. There are some exceptions, such as the dentist to the Prince of Wales. Those dentists are reputed as a matter of course, and from those persons they get first-class prices; but, as a general thing, the prices are much better in Europe all over—it must be borne in mind I am speaking of the aristocrats in Europe—they pay better than in America."

New Anæsthetic.—Recent tests of the new anæsthetic, carbon tetrachloride, prove it to be more energetic than any previous agent used for the purpose, and perfectly regular in its action.

The Purity of Chloral.—At a recent meeting of the Pharmaceutical Society of this city, Prof. Maisch said that, from some experiments, he was convinced that the shape of the crystals was no criterion of its purity; that pure chloral hydrate had a slight acid reaction, and that the density of the white vapors produced with a glass rod moistened with ammonia was largely influenced by the temperature. The practice of giving a little information about physical properties, for the purpose of influencing trade. was carried on in Europe as well as here; he did not believe that absolutely pure chloral hydrate had as yet been put into the market, and he was strengthened in this belief by the transactions of the Berlin Apothecaries' Society, where this question was incidentally ventilated. Of late chloral chloroform, that is, chloroform made by the decomposition of chloral, had been bruited in Germany as the only article worthy of confidence for its purity, but the researches that have been instituted by Schacht and Bilz, upon this claimed superiority of chloral chloroform, had shown it to be entirely erroneous, as the chloral chloroform when treated with sulphuric acid became discolored very speedily, like the chloral from which it had been prepared, which is not the case with absolutely pure chloral, or with the chloroformum purificatum of the Pharmacopœia.—*Med. and Surg. Reporter.*

Death from Chewing Tobacco.—A boy was recently admitted into the Melbourne Hospital suffering from the effects of chewing tobacco. He was in a very weak state, and complained of severe headache and dysentery. He became gradually unconscious and partially paralyzed, and died on the following day. The cause of death was narcotic poisoning.—*Druggists Circular.*

Transplantation of Teeth.—On the 14th of May last I inserted a right superior central incisor, which had been extracted for more than a year, into an alveolar socket from which I had just extracted a like tooth for another patient. The tooth still remains firm in the socket, and the patient tells me that he does not know any difference between that and his other teeth.—E. H. Locke, in *Dental Cosmos.*

UNIVERSITY

Eucalyptus as a Local Anæsthetic.—Dr. Horton (Ohio State Dental Society) speaks of the extract of eucalyptus as producing good results as a pain obtunder in sensitive dentine. A drop on a pledget of cotton is used. He thinks it the best of the local applications.

Cyanide of Zinc in Facial Neuralgia.—Dr. Luton, of Rheims, states that he has obtained excellent results from the cyanide of zinc in rheumatic facial neuralgia simulating cerebral rheumatism. He relates two cases in which, with intense facial neuralgia, there was continued and ardent fever, cephalalgia and tenderness, on pressure at the points where the nerves emerged. The symptoms rapidly abated under the use of the following mixture:—Cyanide of zinc one-fifth of a part, distilled cherry-laurel water twenty-five parts, and tragacanth mucilage mixture 100 parts. A tablespoonful, from hour to hour.—*Journal of Mat. Medica.*

Mixed Narcosis.—During the past two or three weeks, says the *Lancet*, December 1, a novel mode of producing anæsthesia, called mixed narcosis (*gemischte narkose*) has been employed by Thiersch, of Leipzig, whereby insensibility to pain may be procured without the total abolition of consciousness. The credit of the discovery is ascribed to Professor Nussbaum, of Munich. Although suitable for all kinds of operations, it is especially serviceable for operations about the mouth and jaws, in which blood is apt to flow into the trachea, or down the œsophagus into the stomach, and subsequently to cause vomiting. In some cases of removal of the upper jaw lately performed by Thiersch, the patient allowed the blood to accumulate for a while at the back of the pharynx, and then spat it completely out when asked to do so; and we are informed that in one instance the patient watched with evident interest the motion of the saw that was dividing his upper jawbone.

A subcutaneous injection of morphia, from a quarter to half a grain, is given as soon as the patient is placed upon the operating table, and immediately afterward the administration of chloroform is commenced. After inhalation for about five minutes the operation may usually be begun, but the chloroform must be renewed at intervals. The patients lose all sensibility to pain, but evidently retain a considerable degree of consciousness and control of voluntary movements. Within the last month mixed narcosis has been employed five times successfully, as far as the annihilation of pain is concerned, and without any bad effects.

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